

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT

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PRINCIPAL SECTION

RCC STUDY NUMBER A29553

TEST ITEM : ULTRAZINE FG-R	PATH. NO. : 11023 ROL
TEST SYSTEM : Rat	DATE : 14-FEB-07
STUDY TYPE : 13-Week, Oral Toxicity	SPONSOR : DSM Nutritional Products AG

Duodenum	Seminal vesicles
Epididymides (fixed in Bouin's solution)	Skeletal muscle (thigh)
Esophagus	Skin
Eyes with optic nerve (fixed in Davidson's solution)	Spinal cord - cervical, midthoracic, lumbar
Harderian glands	Spleen
Heart	Stomach
Ileum, with Peyer's patches	Testes (fixed in Bouin's solution)
Jejunum with Peyer's patches	Thymus
Kidneys	Thyroid (incl. parathyroid gland, if possible)
Liver	Trachea
Lungs, infused w/formalin at necropsy	Urinary bladder, infused w/formalin at necropsy
Lymph nodes* – mandibular, bronchial, mesenteric	Uterus/cervix
Mammary gland area	Vagina
	Zymbal's gland
	All gross lesions

*with particular attention to possible immunotoxic response.

Histopathology

Histological preparation of the tissues was performed at RCC Ltd, Itingen / Switzerland. Slices of all organs and tissues collected at necropsy (see list above) from all Allocation A and B animals of the control and high dose groups (groups 1 and 4, respectively), from all animals terminated in extremis, all gross lesions and all rectums from all Allocation A and B animals of all groups were processed, embedded in paraffin, cut at a nominal thickness of 2-4 micrometers, stained with hematoxylin & eosin (H&E) and examined by light microscope by the study pathologist.

Because of possible test item-related findings noted in animals of group 4, the mesenteric lymph nodes and kidneys were also evaluated in the animals of groups 2 and 3.

Data Compilation

The animal data and necropsy findings were recorded on RCC-TOX Release 7.0, RCC Ltd, and were transferred electronically via transfer file into the PathData System V6.2.

The microscopic findings were recorded during histopathologic examination by the pathologist and entered directly into the PathData System. The histopathological evaluation was completed in August 2006. Histological changes were described, whenever possible, according to distribution, severity and morphologic character. Severity scores were assigned as given under "Explanation of Codes and Symbols". In paired organs, findings occurred sometimes bilaterally and were of different degrees of severity. When this occurred, the higher degree was recorded and a comment was made that indicated the severity of the lesion in the contralateral organ.

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All microscopic findings are listed in the "TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS" (= AOFT, animal organ finding table), along with an explanation of the codes and symbols used. Computer-generated incidence tables derived from these data are also presented as well as the narrative of both macroscopic and microscopic findings.

Peer Review

The following sections were reviewed by Prof. Dr. Eberhard Karbe (Langendorfer Strasse 17, D 42489 Wülfrath):

- Mesenteric lymph nodes of all animals.
- Kidneys of all animals.
- All organs of animals 2, 15, 128, 137, 44, 91, 107, 220 and 225.

The different diagnoses were discussed between the study pathologist and reviewing pathologist. All differences were resolved leading to agreement of the final diagnoses.

RESULTS

Mortality

Two male rats were killed for ethical reasons unrelated to the test item:

- Male no. 44 (500 mg/kg bw/day) was killed on 02-Feb-2006 (Day 32) and found to have an intestinal intussusception;
- Male no. 87 (1000 mg/kg bw/day) had a markedly enlarged right eye, was removed from the study on 13-Feb-2006 (Day 43) and sacrificed.

All other animals survived their scheduled study or recovery period.

The cause of morbidity of the above mentioned animal, male no. 44, was likely to be due to spontaneous polycystic kidney disease and associated uremia, not related to test item administration. The second animal, male no. 87, was removed for ethical reasons.

Macroscopic Findings

At the end of the treatment and recovery periods no test item-related gross lesions were observed. The macroscopic findings recorded were considered to be within the range of normal background lesions, which may be seen in rats of this strain and age in this study type and were considered incidental, reflecting the usual individual variability.

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Microscopic Findings

The findings that distinguished test item-treated animals from controls were:

-The presence of focal/multifocal aggregates of foamy histiocytes in mesenteric lymph nodes with a tendency to regression after the recovery period. Co-existing tissue damage or reaction could not be recorded. Thus, it is unlikely that this finding could be of adverse nature.

-Tubular kidney vacuolation, in main study and recovery animals. This finding, per se, with non-dose dependant severity grade, in absence of tubular damage or any other sign of renal toxicity or impairment is unlikely to be of adverse nature.

Table 1: Incidence and mean severity of main microscopic findings in mesenteric lymph node. (Main Study)

	Group 1		Group 2		Group 3		Group 4	
Finding	Male 20	Female 20	Male 20	Female 20	Male 20	Female 20	Male 20	Female 20
Foamy Histiocytosis								
Incidence/MeanSeverity	-	-	4/1.0	3/1.0	17/1.3	8/1.3	20/2.3	19/2.1
1 = minimal; 2 = slight; 3 = moderate; 4 = marked								

Table 2: Incidence and mean severity of main microscopic findings in kidneys. (Main Study)

	Group 1		Group 2		Group 3		Group 4	
Finding	Male 20	Female 20	Male 20	Female 20	Male 20	Female 20	Male 20	Female 20
Tubular vacuolation								
Incidence/MeanSeverity	-	-	-	-	-	5/1.0	3/1.0	13/1.0
1 = minimal; 2 = slight; 3 = moderate; 4 = marked								

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After a 4-week recovery period, the microscopic changes in lymph nodes and kidneys were still recorded in animals of group 4. No co-existing tissue damage or reaction was recorded and tubular damage or any other sign of renal toxicity or impairment was absent.

Table 3: Incidence and mean severity of main microscopic findings in mesenteric lymph node. (Recovery)

	Group 1		Group 4	
Finding	Male	Female	Male	Female
	10	10	10	10
Foamy Histiocytosis				
Incidence/MeanSeverity	-	-	10/2.1	10/1.8
1 = minimal; 2 = slight; 3 = moderate; 4 = marked				

Table 4: Incidence and mean severity of main microscopic findings in kidneys. (Recovery)

	Group 1		Group 4	
Finding	Male	Female	Male	Female
	10	10	10	10
Tubular vacuolation				
Incidence/MeanSeverity	-	-	4/1.0	5/1.0
1 = minimal; 2 = slight; 3 = moderate; 4 = marked				

Incidental microscopic findings

Additionally, a variety of other changes were found in this study. They commonly occur in laboratory rats of this strain and age. Neither their incidences nor their distribution or morphologic characteristics gave any indication of a treatment-related association.

The detailed incidence data for all organs as well as tables of all changes including their severity appear in "SUMMARY INCIDENCE OF GRADINGS" and "NUMBER OF ANIMALS WITH MICROSCOPIC FINDINGS".

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CONCLUSIONS

Under the conditions of this study there was one premature death; one male animal of group 2 was killed in extremis on the thirty-second day of the study. The cause of morbidity of the above mentioned animal was due to polycystic kidney disease and associated uremia, not related to test item administration. A second animal, male no. 87 was removed from the study on day 43 due to ethical reasons.

After treatment and recovery periods, there were no test item-related macroscopic findings.

Microscopically, focal/multifocal aggregates of foamy histiocytes were recorded in mesenteric lymph nodes of animals of groups 2, 3 and 4. After the recovery period this finding was still recorded in animals of group 4, with a decrease in its severity grade. Therefore a tendency to regression was stated. It is unlikely that this finding could be of adverse nature, because of this trend to regression and because of the absence of coexisting tissue damage or reaction.

Minimal tubular vacuolation, with non-dose dependant severity grade, was recorded in kidneys of males of group 4, females of groups 3 and 4, and recovery males and females of group 4. This finding, per se, in absence of tubular damage or any other sign of renal toxicity or impairment is unlikely to be of adverse nature.

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RCC Study Number A29553

ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE):

13-Week Oral Toxicity (Feeding) Study
In the Wistar Rat

Report (Part IV of IV)

Study Director: W. H. Braun
Sponsor: DSM Nutritional Products AG
Wurmisweg 576
CH-4303 Kaiseraugst / Switzerland
Test Facility: RCC Ltd
Toxicology
CH-4452 Itingen / Switzerland
Test Guidelines: "Subchronic Toxicity Studies with Rodents", US
Food and Drug Administration, USA.
"Repeated Dose 90-Day Oral Toxicity Study in
Rodents", OECD Guidelines for the Testing of
Chemicals.
Directive 96/54/EC, B. 26. "Subchronic Oral
Toxicity."
Date: 25 May 2007



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SPONSOR : DSM Nutritional Products AG					PathData®System V6.2b5		
NUMBER OF ANIMALS WITH MICROSCOPIC FINDINGS BY ORGAN/GROUP/SEX							
STATUS AT NECROPSY: K0, INCL. DEATHS							
					MALE		
SEX :							
DOSE GROUP:					01	02	03 04
NO.ANIMALS:					20	20	20 20
HEART :					20	1	- 20
- lymphoid C.Infiltr. :					2	1	- -
- Fibrosis :					-	1	- -
TRACHEA :					20	1	- 20
- Glandular Ectasia :					8	-	- 6
LIVER :					20	1	- 20
- Lymphoid C.Infiltr. :					20	-	- 20
- Hematopoiesis :					3	-	- 1
- Fatty change :					12	-	- 15
SPLEEN :					20	1	- 20
- Lymphoid Depletion :					-	1	- -
- Incr.Hemopoiesis :					19	-	- 18
- Fibrosis, red pulp :					-	1	- -
MESENT. LYMPH NODE :					20	20	20 20
- Lymphoid hyperplasia:					13	20	20 12
- Foamy histiocytes :					-	4	17 20
KIDNEYS :					20	20	20 20
- Polycystic Kidney :					-	1	- -
- Tubul.Cystic Dilat. :					-	-	1 -
- Hyaline Droplets :					17	14	12 8
- Tubular Basophilia :					5	5	4 4
- Pelvic Dilation :					-	3	4 3
- Tubular vacuolation :					-	-	- 3
- Lymphoid infiltr. :					-	2	1 -
STOMACH :					20	2	- 20
- Glandular dilation :					-	-	- 1
- Squamous Cyst :					-	-	- 1
- Forestomach Erosion :					-	1	- -
- Submucosal edema :					-	1	- -
- Congestion :					-	1	- -

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NUMBER OF ANIMALS WITH MICROSCOPIC FINDINGS BY ORGAN/GROUP/SEX							
STATUS AT NECROPSY: K0, INCL. DEATHS							
SEX :					MALE		
DOSE GROUP:					01	02	03 04
NO.ANIMALS:					20	20	20 20
PEYERS PATCHES JEJ. : 20 1 - 20							
- Lymphoid Hyperplasia: 15 - - 18							
- Lymphoid depletion : - 1 - -							
ILEUM : 20 1 - 20							
- Intussusception : - 1 - -							
PEYERS PATCHES ILEUM : 20 1 - 20							
- Lymphoid Hyperplasia: 16 - - 20							
- Mineralization : 3 - - 1							
- Lymphoid depletion : - 1 - -							
COLON : 20 1 - 20							
- Luminal dilation : - - - 4							
RECTUM : 20 20 20 20							
- Luminal dilation : 1 2 - 3							
LUNGS : 20 1 1 20							
- Vascular Mineraliz. : 12 - 1 12							
- Osseous Metaplasia : 1 1 1 -							
- Subpl.Lymphoid Inf. : - 1 - -							
THYMUS : 20 6 3 20							
- Epithelial Cyst : 9 3 2 9							
- Hemorrhage : 6 3 3 3							
- Congestion : - 2 - 2							
- Atrophy : 1 1 - -							
TESTES : 20 1 1 20							
- Sertoli C.Vacuolat. : 1 1 - 1							
- Tubular Atrophy : 2 1 1 -							

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STATUS AT NECROPSY: K0, INCL. DEATHS							
SEX :					MALE		
DOSE GROUP:					01	02	03 04
NO.ANIMALS:					20	20	20 20
<hr/>							
EPIDIDYMIDES :					20	1	- 20
- Cellular Debris :					1	1	- -
- Oligospermia :					-	1	- -
- Fibrosis :					1	-	- -
- Tubular Vacuolation :					-	-	- 2
<hr/>							
SUBLINGUAL GLANDS :					20	1	- 20
- Apoptosis :					-	1	- -
<hr/>							
MANDIB.LYMPH NODES :					20	1	- 20
- Lymphoid Hyperplasia:					9	-	- 15
<hr/>							
THYROID GLAND :					20	1	- 20
- Lymphoid C.Infiltr. :					1	-	- -
- Thymic Ectopia :					-	-	- 1
- C-cell hyperplasia :					-	-	- 1
<hr/>							
PARATHYROID GLANDS :					15	1	- 15
- Diffuse Hyperplasia :					-	1	- -
<hr/>							
ADRENAL CORTICES :					20	1	- 20
- Fatty change :					14	-	- 12
- Inflammation :					1	-	- -
- Necrosis :					-	-	- 1
- Hemorrhage :					-	-	- 1
- Diffuse Hypertrophy :					-	1	- -
<hr/>							
SCIATIC NERVE, LEFT :					20	1	- 20
- Nerve Fiber Degener.:					-	1	- -
<hr/>							
SKIN/SUBCUTIS :					20	2	- 20
- Tail, bone atrophy :					1	1	- -
<hr/>							
MAMMARY GLAND :					20	1	- 20
- Adipose tissue only :					14	-	- 5

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STATUS AT NECROPSY: K0, INCL. DEATHS							
SEX :					MALE		
DOSE GROUP:					01	02	03 04
NO.ANIMALS:					20	20	20 20
EYES	:	20	1	-	20		
- Retinal rosette	:	-	1	-	-		
- Retinal degeneration:	:	-	-	-	1		
HARDERIAN GLANDS	:	20	1	-	20		
- Porphyrin Deposits	:	7	-	-	8		
- Inflammation	:	1	-	-	2		
SKELETAL MUSCLE	:	20	1	-	20		
- Lymphoid C.Infiltr.	:	1	-	-	-		
SEMINAL VESICLES	:	20	2	-	20		
- Congestion	:	-	1	-	-		
- Apoptosis	:	-	1	-	-		
BONE MARROW, STERNUM	:	20	1	-	20		
- Fatty replacement	:	-	1	-	-		
BONE, FEMUR	:	20	1	-	20		
- Osteodystro. fibrosa	:	-	1	-	-		
- Bone marrow, hypocel:	:	-	1	-	-		
PITUITARY GLAND	:	20	1	-	20		
- Cyst	:	3	-	-	3		
BRONCHIAL LNN	:	20	1	-	19		
- Lymphoid Hyperplasia:	:	1	-	-	2		
- Hemorrhage	:	-	-	-	1		
- Lymphoid depletion	:	-	1	-	-		
PAROTID GLANDS	:	20	1	-	20		
- Ductular Ectasia	:	-	1	-	-		
- Atrophy	:	-	1	-	-		
LYMPH NODES	:	20	1	1	20		
- Hemorrhage	:	-	-	1	-		
- Cowper's glands	:	-	1	-	-		

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STATUS AT NECROPSY: K0, INCL. DEATHS							
SEX :					FEMALE		
DOSE GROUP:					01	02	03 04
NO.ANIMALS:					20	20	20 20
TRACHEA	:	20	—	—	20		
— Glandular Ectasia	:	8	—	—	8		
LIVER	:	20	—	—	20		
— Lymphoid C.Infiltr.	:	20	—	—	19		
— Hematopoiesis	:	3	—	—	5		
— Fatty change	:	8	—	—	13		
— Necrosis	:	—	—	—	1		
SPLEEN	:	20	—	—	20		
— Incr.Hemopoiesis	:	16	—	—	18		
MESENT. LYMPH NODE	:	20	20	20	20		
— Lymphoid hyperplasia:		9	20	20	6		
— Foamy histiocytes	:	—	3	8	19		
KIDNEYS	:	20	20	20	20		
— Tubular Basophilia	:	1	—	—	—		
— Pelvic Dilation	:	—	2	1	—		
— Mineralization	:	6	8	11	9		
— Transit.C.Hyperpl.	:	—	2	1	—		
— Tubular vacuolation	:	—	—	5	13		
— Lymphoid infiltr.	:	—	—	1	—		
STOMACH	:	20	—	—	20		
— Congestion	:	1	—	—	—		
DUODENUM	:	20	—	—	20		
— Inflammation	:	1	—	—	—		
PEYERS PATCHES JEJ.	:	20	—	—	19		
— Lymphoid Hyperplasia:		16	—	—	9		
PEYERS PATCHES ILEUM	:	20	—	—	20		
— Lymphoid Hyperplasia:		17	—	—	17		
— Mineralization	:	3	—	—	1		

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STATUS AT NECROPSY: K0, INCL. DEATHS							
SEX :					FEMALE		
DOSE GROUP:					01	02	03 04
NO.ANIMALS:					20	20	20 20
COLON	:	20	—	—	20		
— Luminal dilation	:	1	—	—	3		
RECTUM	:	20	20	20	20		
— Luminal dilation	:	1	4	2	3		
LUNGS	:	20	—	—	20		
— Vascular Mineraliz.	:	3	—	—	7		
— Alveol.Histiocytosis:	:	—	—	—	1		
THYMUS	:	20	6	1	20		
— Epithelial Cyst	:	17	5	1	13		
— Hemorrhage	:	1	6	1	3		
— Congestion	:	1	—	—	2		
— Atrophy	:	1	3	—	3		
OVARIES	:	20	1	—	20		
— Stromal C.Hyperpl.	:	13	—	—	13		
— Congestion	:	3	1	—	1		
PANCREAS	:	20	—	1	20		
— Congestion	:	—	—	1	1		
MANDIB.LYMPH NODES	:	20	—	—	20		
— Lymphoid Hyperplasia:	:	13	—	—	15		
— Congestion	:	1	—	—	—		
THYROID GLAND	:	20	—	—	20		
— Thymic Ectopia	:	3	—	—	—		
ADRENAL CORTICES	:	20	—	—	20		
— Fatty change	:	3	—	—	2		
— Mineralization	:	—	—	—	1		
SCIATIC NERVE, LEFT	:	20	—	—	20		
— Nerve Fiber Degener.:	:	3	—	—	4		

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STATUS AT NECROPSY: K0, INCL. DEATHS							
SEX :					FEMALE		
DOSE GROUP:					01	02	03 04
NO.ANIMALS:					20	20	20 20
<hr/>							
SKIN/SUBCUTIS :					20	—	1 20
— Hair Follic.Atrophy :					—	—	— 1
— Tail, bone atrophy :					—	—	1 1
<hr/>							
MAMMARY GLAND :					20	1	— 20
— Adenocarcinoma :					—	1	— —
<hr/>							
HARDERIAN GLANDS :					20	—	— 20
— Porphyrin Deposits :					7	—	— 5
— Inflammation :					1	—	— 3
— Atrophy :					—	—	— 1
<hr/>							
SKELETAL MUSCLE :					20	—	— 20
— Lymphoid C.Infiltr. :					2	—	— —
<hr/>							
UTERUS :					20	1	1 20
— Cycle:Metestrus :					7	—	— 5
— Cycle:Estrus :					8	—	— 6
— Cycle:Proestrus :					1	—	— 3
— Cycle:Diestrus :					4	—	— 6
— Congestion :					1	1	1 —
<hr/>							
BRONCHIAL LNN :					20	—	— 19
— Lymphoid Hyperplasia:					1	—	— —
— Blood in sinuses :					—	—	— 1
<hr/>							
PAROTID GLANDS :					20	—	— 20
— Inflammation :					1	—	— —
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TEST SYSTEM : RAT, 13-Week, Oral					DATE : 14-FEB-07		
SPONSOR : DSM Nutritional Products AG					PathData®System V6.2b5		
NUMBER OF ANIMALS WITH MICROSCOPIC FINDINGS BY ORGAN/GROUP/SEX							
STATUS AT NECROPSY: R1							
SEX :					MALE		
DOSE GROUP:					01	02	03 04
NO.ANIMALS:					10	—	— 10
HEART :					10	—	— 10
— lymphoid C.Infiltr. :					2	—	— 2
TRACHEA :					10	—	— 10
— Glandular Ectasia :					2	—	— 3
LIVER :					10	—	— 10
— Lymphoid C.Infiltr. :					10	—	— 10
— Hematopoiesis :					3	—	—
— Fatty change :					8	—	— 8
SPLEEN :					10	—	— 10
— Incr.Hemopoiesis :					8	—	— 9
MESENT. LYMPH NODE :					10	—	— 10
— Lymphoid hyperplasia:					9	—	— 7
— Foamy histiocytes :					—	—	— 10
KIDNEYS :					10	—	— 10
— Hyaline Droplets :					7	—	— 5
— Tubular Basophilia :					2	—	— 2
— Pelvic Dilation :					1	—	—
— Tubular vacuolation :					—	—	— 4
STOMACH :					10	—	— 10
— Congestion :					—	—	— 1
PEYERS PATCHES JEJ. :					10	—	— 10
— Lymphoid Hyperplasia:					8	—	— 7
PEYERS PATCHES ILEUM :					10	—	— 10
— Lymphoid Hyperplasia:					10	—	— 9
COLON :					10	—	— 10
— Luminal dilation :					3	—	— 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT					PAGE	:	19/ 343
SUMMARY TABLES					RCC	:	A29553
TEST ARTICLE : ULTRAZINE FG-R					PATHOL. NO.: 11023 ROL		
TEST SYSTEM : RAT, 13-Week, Oral					DATE : 14-FEB-07		
SPONSOR : DSM Nutritional Products AG					PathData®System V6.2b5		
NUMBER OF ANIMALS WITH MICROSCOPIC FINDINGS BY ORGAN/GROUP/SEX							
STATUS AT NECROPSY: R1							
					MALE		
	SEX :						
	DOSE GROUP:	01	02	03	04		
	NO.ANIMALS:	10	—	—	10		
RECTUM	:	10	—	—	10		
— Luminal dilation	:	2	—	—	1		
LUNGS	:	10	—	—	10		
— Vascular Mineraliz.	:	7	—	—	3		
THYMUS	:	10	—	—	10		
— Epithelial Cyst	:	2	—	—	3		
— Hemorrhage	:	—	—	—	2		
— Atrophy	:	—	—	—	3		
TESTES	:	10	—	—	10		
— Spermat.Giant Cells	:	—	—	—	1		
EPIDIDYMIDES	:	10	—	—	10		
— Tubular Vacuolation	:	—	—	—	1		
MANDIB.LYMPH NODES	:	10	—	—	10		
— Lymphoid Hyperplasia:	:	7	—	—	8		
ADRENAL CORTICES	:	10	—	—	10		
— Fatty change	:	8	—	—	7		
SCIATIC NERVE, LEFT	:	10	—	—	10		
— Nerve Fiber Degener.:	:	2	—	—	3		
SKIN/SUBCUTIS	:	10	—	—	10		
— Cartilage regenerat.:	:	—	—	—	1		
— Focal fibrosis	:	—	—	—	1		
MAMMARY GLAND	:	10	—	—	10		
— Adipose tissue only	:	4	—	—	1		
EYES	:	10	—	—	10		
— Lens degeneration	:	1	—	—	—		

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ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT					PAGE	:	20/ 343
SUMMARY TABLES					RCC	:	A29553
TEST ARTICLE : ULTRAZINE FG-R					PATHOL. NO.: 11023 ROL		
TEST SYSTEM : RAT, 13-Week, Oral					DATE : 14-FEB-07		
SPONSOR : DSM Nutritional Products AG					PathData®System V6.2b5		
NUMBER OF ANIMALS WITH MICROSCOPIC FINDINGS BY ORGAN/GROUP/SEX							
STATUS AT NECROPSY: R1							
SEX :					MALE		
DOSE GROUP:					01	02	03 04
NO.ANIMALS:					10	—	— 10
HARDERIAN GLANDS : 10 — — 10							
— Porphyrin Deposits : 6 — — 2							
— Inflammation : 1 — — —							
PITUITARY GLAND : 10 — — 9							
— Cyst : 1 — — 1							

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT					PAGE	:	21/ 343
SUMMARY TABLES					RCC	:	A29553
TEST ARTICLE : ULTRAZINE FG-R					PATHOL. NO.: 11023 ROL		
TEST SYSTEM : RAT, 13-Week, Oral					DATE : 14-FEB-07		
SPONSOR : DSM Nutritional Products AG					PathData®System V6.2b5		
NUMBER OF ANIMALS WITH MICROSCOPIC FINDINGS BY ORGAN/GROUP/SEX							
STATUS AT NECROPSY: R1							
SEX :					FEMALE		
DOSE GROUP:					01	02	03 04
NO.ANIMALS:					10	—	— 10
TRACHEA :					10	—	— 10
— Glandular Ectasia :					4	—	— 1
LIVER :					10	—	— 10
— Lymphoid C.Infiltr. :					10	—	— 10
— Hematopoiesis :					5	—	— —
— Fatty change :					8	—	— 7
SPLEEN :					10	—	— 10
— Incr.Hemopoiesis :					10	—	— 10
MESENT. LYMPH NODE :					10	—	— 10
— Lymphoid hyperplasia:					10	—	— 5
— Focal sinus.ectasia :					1	—	— —
— Foamy histiocytes :					—	—	— 10
KIDNEYS :					10	—	— 10
— Mineralization :					3	—	— 4
— Pyelitis :					—	—	— 1
— Transit.C.Hyperpl. :					—	—	— 1
— Tubular vacuolation :					—	—	— 5
STOMACH :					10	—	— 10
— Glandular dilation :					1	—	— —
— Gld.Stomach Erosion :					—	—	— 1
PEYERS PATCHES JEJ. :					10	—	— 10
— Lymphoid Hyperplasia:					7	—	— 2
PEYERS PATCHES ILEUM :					10	—	— 10
— Lymphoid Hyperplasia:					9	—	— 4
COLON :					10	—	— 10
— Luminal dilation :					1	—	— 7
RECTUM :					10	—	— 10
— Luminal dilation :					—	—	— 3

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT					PAGE	:	22/ 343
SUMMARY TABLES					RCC	:	A29553
TEST ARTICLE : ULTRAZINE FG-R					PATHOL. NO.: 11023 ROL		
TEST SYSTEM : RAT, 13-Week, Oral					DATE : 14-FEB-07		
SPONSOR : DSM Nutritional Products AG					PathData®System V6.2b5		
NUMBER OF ANIMALS WITH MICROSCOPIC FINDINGS BY ORGAN/GROUP/SEX							
STATUS AT NECROPSY: R1							
SEX :					FEMALE		
DOSE GROUP:					01	02	03 04
NO.ANIMALS:					10	-	- 10
<hr/>							
LUNGS	:	10	-	-	10		
- Vascular Mineraliz.	:	4	-	-	2		
<hr/>							
THYMUS	:	10	-	-	10		
- Epithelial Cyst	:	9	-	-	7		
- Hemorrhage	:	-	-	-	1		
- Atrophy	:	-	-	-	1		
<hr/>							
OVARIES	:	10	-	-	10		
- Stromal C.Hyperpl.	:	4	-	-	10		
<hr/>							
MANDIB.LYMPH NODES	:	10	-	-	10		
- Lymphoid Hyperplasia:	:	5	-	-	8		
- Congestion	:	-	-	-	1		
<hr/>							
THYROID GLAND	:	10	-	-	10		
- Thymic Ectopia	:	1	-	-	1		
<hr/>							
ADRENAL CORTICES	:	10	-	-	10		
- Fatty change	:	3	-	-	2		
<hr/>							
SCIATIC NERVE, LEFT	:	10	-	-	10		
- Nerve Fiber Degener.:	:	1	-	-	3		
<hr/>							
HARDERIAN GLANDS	:	10	-	-	10		
- Porphyrin Deposits	:	5	-	-	2		
- Inflammation	:	2	-	-	1		
<hr/>							
SKELETAL MUSCLE	:	10	-	-	10		
- Lymphoid C.Infiltr.	:	-	-	-	1		
<hr/>							
UTERUS	:	10	-	-	10		
- Cycle:Metestrus	:	4	-	-	4		
- Cycle:Estrus	:	-	-	-	1		
- Cycle:Proestrus	:	4	-	-	3		
- Cycle:Diestrus	:	2	-	-	2		

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ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT					PAGE	:	23/ 343
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TEST ARTICLE : ULTRAZINE FG-R					PATHOL. NO.: 11023 ROL		
TEST SYSTEM : RAT, 13-Week, Oral					DATE : 14-FEB-07		
SPONSOR : DSM Nutritional Products AG					PathData®System V6.2b5		
<hr/>							
NUMBER OF ANIMALS WITH MICROSCOPIC FINDINGS BY ORGAN/GROUP/SEX							
STATUS AT NECROPSY: R1							
<hr/>							
SEX :					FEMALE		
DOSE GROUP:					01	02	03 04
NO.ANIMALS:					10	—	— 10
<hr/>							
PITUITARY GLAND :					10	—	— 10
— Cyst :					1	—	— —
<hr/>							
PAROTID GLANDS :					10	—	— 10
— Inflammation :					1	—	— —

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT					PAGE	:	24/ 343
SUMMARY TABLES					RCC	:	A29553
<i>TEST ARTICLE</i> : ULTRAZINE FG-R					<i>PATHOL. NO.:</i>		11023 ROL
<i>TEST SYSTEM</i> : RAT, 13-Week, Oral					<i>DATE</i>	:	14-FEB-07
<i>SPONSOR</i> : DSM Nutritional Products AG					<i>PathData®System</i>		V6.2b5
SUMMARY INCIDENCE OF GRADINGS BY ORGAN/GROUP/SEX							
STATUS AT NECROPSY: K0, INCL. DEATHS							
SEX :					MALE		
DOSE GROUP:					01	02	03 04
NO.ANIMALS:					20	20	20 20
<hr/>							
HEART :					20	1	- 20
- lymphoid C.Infiltr.							
GRADE 1 :					2	-	- -
GRADE 3 :					-	1	- -
TOTAL AFFECTED :					2	1	- -
MEAN SEVERITY :					1.0	3.0	- -
.....							
- Fibrosis							
GRADE 1 :					-	1	- -
TOTAL AFFECTED :					-	1	- -
MEAN SEVERITY :					-	1.0	- -
<hr/>							
TRACHEA :					20	1	- 20
- Glandular Ectasia							
GRADE 1 :					8	-	- 5
GRADE 2 :					-	-	- 1
TOTAL AFFECTED :					8	-	- 6
MEAN SEVERITY :					1.0	-	- 1.2
<hr/>							
LIVER :					20	1	- 20
- Lymphoid C.Infiltr.							
GRADE 1 :					20	-	- 20
TOTAL AFFECTED :					20	-	- 20
MEAN SEVERITY :					1.0	-	- 1.0
.....							
- Hematopoiesis							
GRADE 1 :					3	-	- 1
TOTAL AFFECTED :					3	-	- 1
MEAN SEVERITY :					1.0	-	- 1.0
.....							

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT						PAGE	:	25/ 343
SUMMARY TABLES						RCC	:	A29553
TEST ARTICLE : ULTRAZINE FG-R						PATHOL. NO.: 11023 ROL		
TEST SYSTEM : RAT, 13-Week, Oral						DATE : 14-FEB-07		
SPONSOR : DSM Nutritional Products AG						PathData®System V6.2b5		
SUMMARY INCIDENCE OF GRADINGS BY ORGAN/GROUP/SEX								
STATUS AT NECROPSY: K0, INCL. DEATHS								
						MALE		
SEX :								
DOSE GROUP:						01	02	03 04
NO.ANIMALS:						20	20	20 20
LIVER CONT'D.						20	1	— 20
- Fatty change								
GRADE 1 :						12	—	— 14
GRADE 2 :						—	—	— 1
TOTAL AFFECTED :						12	—	— 15
MEAN SEVERITY :						1.0	—	— 1.1
SPLEEN :						20	1	— 20
- Lymphoid Depletion								
GRADE 2 :						—	1	— —
TOTAL AFFECTED :						—	1	— —
MEAN SEVERITY :						—	2.0	— —
.....								
- Incr.Hemopoiesis								
GRADE 1 :						19	—	— 17
GRADE 2 :						—	—	— 1
TOTAL AFFECTED :						19	—	— 18
MEAN SEVERITY :						1.0	—	— 1.1
.....								
- Fibrosis, red pulp								
GRADE 2 :						—	1	— —
TOTAL AFFECTED :						—	1	— —
MEAN SEVERITY :						—	2.0	— —
MESENT. LYMPH NODE :						20	20	20 20
- Lymphoid hyperplasia								
GRADE 1 :						13	15	18 11
GRADE 2 :						—	5	2 1
TOTAL AFFECTED :						13	20	20 12
MEAN SEVERITY :						1.0	1.3	1.1 1.1
.....								

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 26/ 343
SUMMARY TABLES RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

SUMMARY INCIDENCE OF GRADINGS BY ORGAN/GROUP/SEX
STATUS AT NECROPSY: K0, INCL. DEATHS

SEX :					MALE
DOSE GROUP:	01	02	03	04	
NO. ANIMALS:	20	20	20	20	
MESENT. LYMPH NODE :	20	20	20	20	
- Foamy histiocytes					
GRADE 1 :	-	4	12	2	
GRADE 2 :	-	-	5	11	
GRADE 3 :	-	-	-	7	
TOTAL AFFECTED :	-	4	17	20	
MEAN SEVERITY :	-	1.0	1.3	2.3	
KIDNEYS :	20	20	20	20	
- Polycystic Kidney					
GRADE 4 :	-	1	-	-	
TOTAL AFFECTED :	-	1	-	-	
MEAN SEVERITY :	-	4.0	-	-	
.....					
- Tubul.Cystic Dilat.					
GRADE 1 :	-	-	1	-	
TOTAL AFFECTED :	-	-	1	-	
MEAN SEVERITY :	-	-	1.0	-	
.....					
- Hyaline Droplets					
GRADE 1 :	17	14	12	8	
TOTAL AFFECTED :	17	14	12	8	
MEAN SEVERITY :	1.0	1.0	1.0	1.0	
.....					
- Tubular Basophilia					
GRADE 1 :	5	5	3	4	
GRADE 2 :	-	-	1	-	
TOTAL AFFECTED :	5	5	4	4	
MEAN SEVERITY :	1.0	1.0	1.3	1.0	
.....					

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT					PAGE	:	27/ 343
SUMMARY TABLES					RCC	:	A29553
TEST ARTICLE : ULTRAZINE FG-R					PATHOL. NO.: 11023 ROL		
TEST SYSTEM : RAT, 13-Week, Oral					DATE : 14-FEB-07		
SPONSOR : DSM Nutritional Products AG					PathData®System V6.2b5		
SUMMARY INCIDENCE OF GRADINGS BY ORGAN/GROUP/SEX							
STATUS AT NECROPSY: K0, INCL. DEATHS							
SEX :					MALE		
DOSE GROUP:					01	02	03 04
NO.ANIMALS:					20	20	20 20
KIDNEYS	CONT'D.	20	20	20	20		
- Pelvic Dilation							
GRADE 1 :		-	2	4	2		
GRADE 2 :		-	1	-	1		
TOTAL AFFECTED :		-	3	4	3		
MEAN SEVERITY :		-	1.3	1.0	1.3		
.....							
- Tubular vacuolation							
GRADE 1 :		-	-	-	3		
TOTAL AFFECTED :		-	-	-	3		
MEAN SEVERITY :		-	-	-	1.0		
.....							
- Lymphoid infiltr.							
GRADE 1 :		-	2	1	-		
TOTAL AFFECTED :		-	2	1	-		
MEAN SEVERITY :		-	1.0	1.0	-		
STOMACH	:	20	2	-	20		
- Glandular dilation							
GRADE 1 :		-	-	-	1		
TOTAL AFFECTED :		-	-	-	1		
MEAN SEVERITY :		-	-	-	1.0		
.....							
- Squamous Cyst							
GRADE 1 :		-	-	-	1		
TOTAL AFFECTED :		-	-	-	1		
MEAN SEVERITY :		-	-	-	1.0		
.....							
- Forestomach Erosion							
GRADE 4 :		-	1	-	-		
TOTAL AFFECTED :		-	1	-	-		
MEAN SEVERITY :		-	4.0	-	-		
.....							

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 28/ 343
SUMMARY TABLES RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

SUMMARY INCIDENCE OF GRADINGS BY ORGAN/GROUP/SEX
STATUS AT NECROPSY: K0, INCL. DEATHS

SEX :					MALE
DOSE GROUP:	01	02	03	04	
NO. ANIMALS:	20	20	20	20	
STOMACH	CONT'D.	20	2	—	20
— Submucosal edema					
GRADE 4 :	—	1	—	—	
TOTAL AFFECTED :	—	1	—	—	
MEAN SEVERITY :	—	4.0	—	—	
PEYERS PATCHES JEJ. :	20	1	—	20	
— Lymphoid Hyperplasia					
GRADE 1 :	14	—	—	18	
GRADE 2 :	1	—	—	—	
TOTAL AFFECTED :	15	—	—	18	
MEAN SEVERITY :	1.1	—	—	1.0	
.....					
— Lymphoid depletion					
GRADE 3 :	—	1	—	—	
TOTAL AFFECTED :	—	1	—	—	
MEAN SEVERITY :	—	3.0	—	—	
PEYERS PATCHES ILEUM :	20	1	—	20	
— Lymphoid Hyperplasia					
GRADE 1 :	15	—	—	19	
GRADE 2 :	1	—	—	1	
TOTAL AFFECTED :	16	—	—	20	
MEAN SEVERITY :	1.1	—	—	1.1	
.....					
— Mineralization					
GRADE 1 :	3	—	—	1	
TOTAL AFFECTED :	3	—	—	1	
MEAN SEVERITY :	1.0	—	—	1.0	
.....					

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT					PAGE	:	29/ 343
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TEST ARTICLE : ULTRAZINE FG-R					PATHOL. NO.: 11023 ROL		
TEST SYSTEM : RAT, 13-Week, Oral					DATE : 14-FEB-07		
SPONSOR : DSM Nutritional Products AG					PathData®System V6.2b5		
SUMMARY INCIDENCE OF GRADINGS BY ORGAN/GROUP/SEX							
STATUS AT NECROPSY: K0, INCL. DEATHS							
SEX :					MALE		
DOSE GROUP:					01	02	03 04
NO.ANIMALS:					20	20	20 20
<hr/>							
PEYERS PATCHES ILEUM :					20	1	- 20
- Lymphoid depletion							
GRADE 1 :					-	1	- -
TOTAL AFFECTED :					-	1	- -
MEAN SEVERITY :					-	1.0	- -
<hr/>							
COLON :					20	1	- 20
- Luminal dilation							
GRADE 1 :					-	-	- 3
GRADE 2 :					-	-	- 1
TOTAL AFFECTED :					-	-	- 4
MEAN SEVERITY :					-	-	- 1.3
<hr/>							
RECTUM :					20	20	20 20
- Luminal dilation							
GRADE 1 :					-	-	- 3
GRADE 2 :					1	-	- -
GRADE 3 :					-	1	- -
GRADE 4 :					-	1	- -
TOTAL AFFECTED :					1	2	- 3
MEAN SEVERITY :					2.0	3.5	- 1.0
<hr/>							
LUNGS :					20	1	1 20
- Vascular Mineraliz.							
GRADE 1 :					12	-	1 12
TOTAL AFFECTED :					12	-	1 12
MEAN SEVERITY :					1.0	-	1.0 1.0
<hr/>							
.....							
- Osseous Metaplasia							
GRADE 1 :					1	1	1 -
TOTAL AFFECTED :					1	1	1 -
MEAN SEVERITY :					1.0	1.0	1.0 -
<hr/>							
.....							

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT					PAGE	:	30/ 343
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TEST SYSTEM : RAT, 13-Week, Oral					DATE : 14-FEB-07		
SPONSOR : DSM Nutritional Products AG					PathData®System V6.2b5		
SUMMARY INCIDENCE OF GRADINGS BY ORGAN/GROUP/SEX							
STATUS AT NECROPSY: K0, INCL. DEATHS							
SEX :					MALE		
DOSE GROUP:					01	02	03 04
NO.ANIMALS:					20	20	20 20
<hr/>							
LUNGS	CONT'D.	20	1	1	20		
- Subpl.Lymphoid Inf.							
GRADE 1 :		-	1	-	-		
TOTAL AFFECTED :		-	1	-	-		
MEAN SEVERITY :		-	1.0	-	-		
<hr/>							
THYMUS	:	20	6	3	20		
- Hemorrhage							
GRADE 1 :		6	3	3	3		
TOTAL AFFECTED :		6	3	3	3		
MEAN SEVERITY :		1.0	1.0	1.0	1.0		
<hr/>							
.....							
- Atrophy							
GRADE 1 :		1	-	-	-		
GRADE 3 :		-	1	-	-		
TOTAL AFFECTED :		1	1	-	-		
MEAN SEVERITY :		1.0	3.0	-	-		
<hr/>							
TESTES	:	20	1	1	20		
- Sertoli C.Vacuolat.							
GRADE 1 :		1	1	-	1		
TOTAL AFFECTED :		1	1	-	1		
MEAN SEVERITY :		1.0	1.0	-	1.0		
<hr/>							
.....							
- Tubular Atrophy							
GRADE 1 :		1	1	-	-		
GRADE 4 :		1	-	1	-		
TOTAL AFFECTED :		2	1	1	-		
MEAN SEVERITY :		2.5	1.0	4.0	-		

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT					PAGE	:	31/ 343
SUMMARY TABLES					RCC	:	A29553
TEST ARTICLE : ULTRAZINE FG-R					PATHOL. NO.: 11023 ROL		
TEST SYSTEM : RAT, 13-Week, Oral					DATE : 14-FEB-07		
SPONSOR : DSM Nutritional Products AG					PathData®System V6.2b5		
SUMMARY INCIDENCE OF GRADINGS BY ORGAN/GROUP/SEX							
STATUS AT NECROPSY: K0, INCL. DEATHS							
SEX :					MALE		
DOSE GROUP:					01	02	03 04
NO.ANIMALS:					20	20	20 20
EPIDIDYMIDES : 20 1 - 20							
- Cellular Debris							
GRADE 2 :					-	1	- -
GRADE 3 :					1	-	- -
TOTAL AFFECTED :					1	1	- -
MEAN SEVERITY :					3.0	2.0	- -
.....							
- Oligospermia							
GRADE 3 :					-	1	- -
TOTAL AFFECTED :					-	1	- -
MEAN SEVERITY :					-	3.0	- -
.....							
- Fibrosis							
GRADE 2 :					1	-	- -
TOTAL AFFECTED :					1	-	- -
MEAN SEVERITY :					2.0	-	- -
.....							
- Tubular Vacuolation							
GRADE 1 :					-	-	- 2
TOTAL AFFECTED :					-	-	- 2
MEAN SEVERITY :					-	-	- 1.0
.....							
SUBLINGUAL GLANDS : 20 1 - 20							
- Apoptosis							
GRADE 2 :					-	1	- -
TOTAL AFFECTED :					-	1	- -
MEAN SEVERITY :					-	2.0	- -

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ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT					PAGE	:	32/ 343
SUMMARY TABLES					RCC	:	A29553
TEST ARTICLE : ULTRAZINE FG-R					PATHOL. NO.: 11023 ROL		
TEST SYSTEM : RAT, 13-Week, Oral					DATE : 14-FEB-07		
SPONSOR : DSM Nutritional Products AG					PathData®System V6.2b5		
SUMMARY INCIDENCE OF GRADINGS BY ORGAN/GROUP/SEX							
STATUS AT NECROPSY: K0, INCL. DEATHS							
SEX :					MALE		
DOSE GROUP:					01	02	03 04
NO.ANIMALS:					20	20	20 20
MANDIB.LYMPH NODES : 20 1 - 20							
- Lymphoid Hyperplasia							
GRADE 1 :					7	-	- 15
GRADE 2 :					2	-	- -
TOTAL AFFECTED :					9	-	- 15
MEAN SEVERITY :					1.2	-	- 1.0
THYROID GLAND : 20 1 - 20							
- Lymphoid C.Infiltr.							
GRADE 1 :					1	-	- -
TOTAL AFFECTED :					1	-	- -
MEAN SEVERITY :					1.0	-	- -
.....							
- C-cell hyperplasia							
GRADE 1 :					-	-	- 1
TOTAL AFFECTED :					-	-	- 1
MEAN SEVERITY :					-	-	- 1.0
PARATHYROID GLANDS : 15 1 - 15							
- Diffuse Hyperplasia							
GRADE 3 :					-	1	- -
TOTAL AFFECTED :					-	1	- -
MEAN SEVERITY :					-	3.0	- -
ADRENAL CORTICES : 20 1 - 20							
- Fatty change							
GRADE 1 :					9	-	- 11
GRADE 2 :					4	-	- 1
GRADE 3 :					1	-	- -
TOTAL AFFECTED :					14	-	- 12
MEAN SEVERITY :					1.4	-	- 1.1
.....							

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT					PAGE	:	33/ 343
SUMMARY TABLES					RCC	:	A29553
TEST ARTICLE : ULTRAZINE FG-R					PATHOL. NO.: 11023 ROL		
TEST SYSTEM : RAT, 13-Week, Oral					DATE : 14-FEB-07		
SPONSOR : DSM Nutritional Products AG					PathData®System V6.2b5		
SUMMARY INCIDENCE OF GRADINGS BY ORGAN/GROUP/SEX							
STATUS AT NECROPSY: K0, INCL. DEATHS							
SEX :					MALE		
DOSE GROUP:					01	02	03 04
NO.ANIMALS:					20	20	20 20
ADRENAL CORTICES :					20	1	- 20
- Inflammation							
GRADE 1 :					1	-	- -
TOTAL AFFECTED :					1	-	- -
MEAN SEVERITY :					1.0	-	- -
.....							
- Necrosis							
GRADE 1 :					-	-	- 1
TOTAL AFFECTED :					-	-	- 1
MEAN SEVERITY :					-	-	- 1.0
.....							
- Hemorrhage							
GRADE 1 :					-	-	- 1
TOTAL AFFECTED :					-	-	- 1
MEAN SEVERITY :					-	-	- 1.0
.....							
- Diffuse Hypertrophy							
GRADE 1 :					-	1	- -
TOTAL AFFECTED :					-	1	- -
MEAN SEVERITY :					-	1.0	- -
SCIATIC NERVE, LEFT :					20	1	- 20
- Nerve Fiber Degener.							
GRADE 1 :					-	1	- -
TOTAL AFFECTED :					-	1	- -
MEAN SEVERITY :					-	1.0	- -

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ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT					PAGE	:	34/ 343
SUMMARY TABLES					RCC	:	A29553
TEST ARTICLE : ULTRAZINE FG-R					PATHOL. NO.: 11023 ROL		
TEST SYSTEM : RAT, 13-Week, Oral					DATE : 14-FEB-07		
SPONSOR : DSM Nutritional Products AG					PathData®System V6.2b5		
SUMMARY INCIDENCE OF GRADINGS BY ORGAN/GROUP/SEX							
STATUS AT NECROPSY: K0, INCL. DEATHS							
SEX :					MALE		
DOSE GROUP:					01	02	03 04
NO.ANIMALS:					20	20	20 20
SKIN/SUBCUTIS :					20	2	- 20
- Tail, bone atrophy							
GRADE 1 :					1	1	- -
TOTAL AFFECTED :					1	1	- -
MEAN SEVERITY :					1.0	1.0	- -
EYES :					20	1	- 20
- Retinal rosette							
GRADE 2 :					-	1	- -
TOTAL AFFECTED :					-	1	- -
MEAN SEVERITY :					-	2.0	- -
.....							
- Retinal degeneration							
GRADE 2 :					-	-	- 1
TOTAL AFFECTED :					-	-	- 1
MEAN SEVERITY :					-	-	- 2.0
HARDERIAN GLANDS :					20	1	- 20
- Porphyrin Deposits							
GRADE 1 :					7	-	- 8
TOTAL AFFECTED :					7	-	- 8
MEAN SEVERITY :					1.0	-	- 1.0
.....							
- Inflammation							
GRADE 1 :					1	-	- 2
TOTAL AFFECTED :					1	-	- 2
MEAN SEVERITY :					1.0	-	- 1.0

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ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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SUMMARY TABLES					RCC	:	A29553
TEST ARTICLE : ULTRAZINE FG-R					PATHOL. NO.: 11023 ROL		
TEST SYSTEM : RAT, 13-Week, Oral					DATE : 14-FEB-07		
SPONSOR : DSM Nutritional Products AG					PathData®System V6.2b5		
SUMMARY INCIDENCE OF GRADINGS BY ORGAN/GROUP/SEX							
STATUS AT NECROPSY: K0, INCL. DEATHS							
SEX :					MALE		
DOSE GROUP:					01	02	03 04
NO.ANIMALS:					20	20	20 20
<hr/>							
SKELETAL MUSCLE :					20	1	- 20
- Lymphoid C.Infiltr.							
GRADE 1 :					1	-	- -
TOTAL AFFECTED :					1	-	- -
MEAN SEVERITY :					1.0	-	- -
<hr/>							
SEMINAL VESICLES :					20	2	- 20
- Apoptosis							
GRADE 2 :					-	1	- -
TOTAL AFFECTED :					-	1	- -
MEAN SEVERITY :					-	2.0	- -
<hr/>							
BONE MARROW, STERNUM :					20	1	- 20
- Fatty replacement							
GRADE 3 :					-	1	- -
TOTAL AFFECTED :					-	1	- -
MEAN SEVERITY :					-	3.0	- -
<hr/>							
BONE, FEMUR :					20	1	- 20
- Osteodystr. fibrosa							
GRADE 2 :					-	1	- -
TOTAL AFFECTED :					-	1	- -
MEAN SEVERITY :					-	2.0	- -
<hr/>							
.....							
- Bone marrow, hypocel							
GRADE 3 :					-	1	- -
TOTAL AFFECTED :					-	1	- -
MEAN SEVERITY :					-	3.0	- -
<hr/>							

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT					PAGE	:	36/ 343
SUMMARY TABLES					RCC	:	A29553
TEST ARTICLE : ULTRAZINE FG-R					PATHOL. NO.: 11023 ROL		
TEST SYSTEM : RAT, 13-Week, Oral					DATE : 14-FEB-07		
SPONSOR : DSM Nutritional Products AG					PathData®System V6.2b5		
SUMMARY INCIDENCE OF GRADINGS BY ORGAN/GROUP/SEX							
STATUS AT NECROPSY: K0, INCL. DEATHS							
SEX :					MALE		
DOSE GROUP:					01	02	03 04
NO.ANIMALS:					20	20	20 20
<hr/>							
BRONCHIAL LNN :					20	1	- 19
- Lymphoid Hyperplasia							
GRADE 1 :					1	-	- 2
TOTAL AFFECTED :					1	-	- 2
MEAN SEVERITY :					1.0	-	- 1.0
.....							
- Hemorrhage							
GRADE 1 :					-	-	- 1
TOTAL AFFECTED :					-	-	- 1
MEAN SEVERITY :					-	-	- 1.0
.....							
- Lymphoid depletion							
GRADE 1 :					-	1	- -
TOTAL AFFECTED :					-	1	- -
MEAN SEVERITY :					-	1.0	- -
<hr/>							
PAROTID GLANDS :					20	1	- 20
- Ductular Ectasia							
GRADE 2 :					-	1	- -
TOTAL AFFECTED :					-	1	- -
MEAN SEVERITY :					-	2.0	- -
.....							
- Atrophy							
GRADE 2 :					-	1	- -
TOTAL AFFECTED :					-	1	- -
MEAN SEVERITY :					-	2.0	- -

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT					PAGE	:	37/ 343
SUMMARY TABLES					RCC	:	A29553
TEST ARTICLE : ULTRAZINE FG-R					PATHOL. NO.: 11023 ROL		
TEST SYSTEM : RAT, 13-Week, Oral					DATE : 14-FEB-07		
SPONSOR : DSM Nutritional Products AG					PathData®System V6.2b5		
SUMMARY INCIDENCE OF GRADINGS BY ORGAN/GROUP/SEX							
STATUS AT NECROPSY: K0, INCL. DEATHS							
SEX :					MALE		
DOSE GROUP:					01	02	03 04
NO.ANIMALS:					20	20	20 20
LYMPH NODES :					20	1	1 20
- Hemorrhage							
GRADE 2 :					-	-	1 -
TOTAL AFFECTED :					-	-	1 -
MEAN SEVERITY :					-	-	2.0 -

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT					PAGE	:	38/ 343
SUMMARY TABLES					RCC	:	A29553
TEST ARTICLE : ULTRAZINE FG-R					PATHOL. NO.: 11023 ROL		
TEST SYSTEM : RAT, 13-Week, Oral					DATE : 14-FEB-07		
SPONSOR : DSM Nutritional Products AG					PathData®System V6.2b5		
SUMMARY INCIDENCE OF GRADINGS BY ORGAN/GROUP/SEX							
STATUS AT NECROPSY: K0, INCL. DEATHS							
SEX :					FEMALE		
DOSE GROUP:					01	02	03 04
NO.ANIMALS:					20	20	20 20
TRACHEA :					20	—	— 20
— Glandular Ectasia							
GRADE 1 :					8	—	— 8
TOTAL AFFECTED :					8	—	— 8
MEAN SEVERITY :					1.0	—	— 1.0
LIVER :					20	—	— 20
— Lymphoid C.Infiltr.							
GRADE 1 :					20	—	— 19
TOTAL AFFECTED :					20	—	— 19
MEAN SEVERITY :					1.0	—	— 1.0
.....							
— Hematopoiesis							
GRADE 1 :					3	—	— 5
TOTAL AFFECTED :					3	—	— 5
MEAN SEVERITY :					1.0	—	— 1.0
.....							
— Fatty change							
GRADE 1 :					8	—	— 11
GRADE 2 :					—	—	— 2
TOTAL AFFECTED :					8	—	— 13
MEAN SEVERITY :					1.0	—	— 1.2
.....							
— Necrosis							
GRADE 3 :					—	—	— 1
TOTAL AFFECTED :					—	—	— 1
MEAN SEVERITY :					—	—	— 3.0

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT					PAGE	:	39/ 343
SUMMARY TABLES					RCC	:	A29553
<i>TEST ARTICLE</i> : ULTRAZINE FG-R					<i>PATHOL. NO.:</i>		11023 ROL
<i>TEST SYSTEM</i> : RAT, 13-Week, Oral					<i>DATE</i>	:	14-FEB-07
<i>SPONSOR</i> : DSM Nutritional Products AG					<i>PathData®System</i>		V6.2b5
SUMMARY INCIDENCE OF GRADINGS BY ORGAN/GROUP/SEX							
STATUS AT NECROPSY: K0, INCL. DEATHS							
SEX :					FEMALE		
DOSE GROUP:					01	02	03 04
NO. ANIMALS:					20	20	20 20
<hr/>							
SPLEEN :					20	—	— 20
— Incr. Hemopoiesis							
GRADE 1 :					15	—	— 14
GRADE 2 :					—	—	— 4
GRADE 3 :					1	—	— —
TOTAL AFFECTED :					16	—	— 18
MEAN SEVERITY :					1.1	—	— 1.2
<hr/>							
MESENT. LYMPH NODE :					20	20	20 20
— Lymphoid hyperplasia							
GRADE 1 :					9	17	18 6
GRADE 2 :					—	3	2 —
TOTAL AFFECTED :					9	20	20 6
MEAN SEVERITY :					1.0	1.2	1.1 1.0
.....							
— Foamy histiocytes							
GRADE 1 :					—	3	6 5
GRADE 2 :					—	—	2 7
GRADE 3 :					—	—	— 7
TOTAL AFFECTED :					—	3	8 19
MEAN SEVERITY :					—	1.0	1.3 2.1
<hr/>							
KIDNEYS :					20	20	20 20
— Tubular Basophilia							
GRADE 1 :					1	—	— —
TOTAL AFFECTED :					1	—	— —
MEAN SEVERITY :					1.0	—	— —
.....							
— Pelvic Dilation							
GRADE 1 :					—	2	1 —
TOTAL AFFECTED :					—	2	1 —
MEAN SEVERITY :					—	1.0	1.0 —
.....							

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT					PAGE	:	40/ 343
SUMMARY TABLES					RCC	:	A29553
TEST ARTICLE : ULTRAZINE FG-R					PATHOL. NO.: 11023 ROL		
TEST SYSTEM : RAT, 13-Week, Oral					DATE : 14-FEB-07		
SPONSOR : DSM Nutritional Products AG					PathData®System V6.2b5		
SUMMARY INCIDENCE OF GRADINGS BY ORGAN/GROUP/SEX							
STATUS AT NECROPSY: K0, INCL. DEATHS							
SEX :					FEMALE		
DOSE GROUP:					01	02	03 04
NO.ANIMALS:					20	20	20 20
KIDNEYS CONT'D.					20	20	20 20
- Mineralization							
GRADE 1 :					6	8	11 9
TOTAL AFFECTED :					6	8	11 9
MEAN SEVERITY :					1.0	1.0	1.0 1.0
.....							
- Transit.C.Hyperpl.							
GRADE 1 :					-	2	1 -
TOTAL AFFECTED :					-	2	1 -
MEAN SEVERITY :					-	1.0	1.0 -
.....							
- Tubular vacuolation							
GRADE 1 :					-	-	5 13
TOTAL AFFECTED :					-	-	5 13
MEAN SEVERITY :					-	-	1.0 1.0
.....							
- Lymphoid infilt.							
GRADE 1 :					-	-	1 -
TOTAL AFFECTED :					-	-	1 -
MEAN SEVERITY :					-	-	1.0 -
DUODENUM :					20	-	- 20
- Inflammation							
GRADE 1 :					1	-	- -
TOTAL AFFECTED :					1	-	- -
MEAN SEVERITY :					1.0	-	- -

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT					PAGE	:	41/ 343
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TEST ARTICLE : ULTRAZINE FG-R					PATHOL. NO.: 11023 ROL		
TEST SYSTEM : RAT, 13-Week, Oral					DATE : 14-FEB-07		
SPONSOR : DSM Nutritional Products AG					PathData®System V6.2b5		
SUMMARY INCIDENCE OF GRADINGS BY ORGAN/GROUP/SEX							
STATUS AT NECROPSY: K0, INCL. DEATHS							
SEX :					FEMALE		
DOSE GROUP:					01	02	03 04
NO.ANIMALS:					20	20	20 20
PEYERS PATCHES JEJ. :					20	-	- 19
- Lymphoid Hyperplasia							
GRADE 1 :					16	-	- 9
TOTAL AFFECTED :					16	-	- 9
MEAN SEVERITY :					1.0	-	- 1.0
PEYERS PATCHES ILEUM :					20	-	- 20
- Lymphoid Hyperplasia							
GRADE 1 :					17	-	- 17
TOTAL AFFECTED :					17	-	- 17
MEAN SEVERITY :					1.0	-	- 1.0
.....							
- Mineralization							
GRADE 1 :					3	-	- 1
TOTAL AFFECTED :					3	-	- 1
MEAN SEVERITY :					1.0	-	- 1.0
COLON :					20	-	- 20
- Luminal dilation							
GRADE 1 :					1	-	- 2
GRADE 2 :					-	-	- 1
TOTAL AFFECTED :					1	-	- 3
MEAN SEVERITY :					1.0	-	- 1.3
RECTUM :					20	20	20 20
- Luminal dilation							
GRADE 1 :					1	1	2 1
GRADE 2 :					-	2	- 2
GRADE 3 :					-	1	- -
TOTAL AFFECTED :					1	4	2 3
MEAN SEVERITY :					1.0	2.0	1.0 1.7

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT					PAGE	:	42/ 343
SUMMARY TABLES					RCC	:	A29553
TEST ARTICLE : ULTRAZINE FG-R					PATHOL. NO.: 11023 ROL		
TEST SYSTEM : RAT, 13-Week, Oral					DATE : 14-FEB-07		
SPONSOR : DSM Nutritional Products AG					PathData®System V6.2b5		
SUMMARY INCIDENCE OF GRADINGS BY ORGAN/GROUP/SEX							
STATUS AT NECROPSY: K0, INCL. DEATHS							
SEX :					FEMALE		
DOSE GROUP:					01	02	03 04
NO.ANIMALS:					20	20	20 20
<hr/>							
LUNGS	:	20	-	-	20		
- Vascular Mineraliz.							
GRADE 1 :	3	-	-	7			
TOTAL AFFECTED :	3	-	-	7			
MEAN SEVERITY :	1.0	-	-	1.0			
.....							
- Alveol.Histiocytosis							
GRADE 1 :	-	-	-	1			
TOTAL AFFECTED :	-	-	-	1			
MEAN SEVERITY :	-	-	-	1.0			
<hr/>							
THYMUS	:	20	6	1	20		
- Hemorrhage							
GRADE 1 :	1	5	1	3			
GRADE 2 :	-	1	-	-			
TOTAL AFFECTED :	1	6	1	3			
MEAN SEVERITY :	1.0	1.2	1.0	1.0			
.....							
- Atrophy							
GRADE 1 :	1	3	-	3			
TOTAL AFFECTED :	1	3	-	3			
MEAN SEVERITY :	1.0	1.0	-	1.0			
<hr/>							
OVARIES	:	20	1	-	20		
- Stromal C.Hyperpl.							
GRADE 1 :	13	-	-	13			
TOTAL AFFECTED :	13	-	-	13			
MEAN SEVERITY :	1.0	-	-	1.0			

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST SYSTEM : RAT, 13-Week, Oral					DATE : 14-FEB-07		
SPONSOR : DSM Nutritional Products AG					PathData®System V6.2b5		
SUMMARY INCIDENCE OF GRADINGS BY ORGAN/GROUP/SEX							
STATUS AT NECROPSY: K0, INCL. DEATHS							
SEX :					FEMALE		
DOSE GROUP: 01 02 03 04							
NO.ANIMALS: 20 20 20 20							
MANDIB.LYMPH NODES : 20 - - 20							
- Lymphoid Hyperplasia							
GRADE 1 : 13 - - 15							
TOTAL AFFECTED : 13 - - 15							
MEAN SEVERITY : 1.0 - - 1.0							
ADRENAL CORTICES : 20 - - 20							
- Fatty change							
GRADE 1 : 3 - - 2							
TOTAL AFFECTED : 3 - - 2							
MEAN SEVERITY : 1.0 - - 1.0							
.....							
- Mineralization							
GRADE 2 : - - - 1							
TOTAL AFFECTED : - - - 1							
MEAN SEVERITY : - - - 2.0							
SCIATIC NERVE, LEFT : 20 - - 20							
- Nerve Fiber Degener.							
GRADE 1 : 3 - - 4							
TOTAL AFFECTED : 3 - - 4							
MEAN SEVERITY : 1.0 - - 1.0							
SKIN/SUBCUTIS : 20 - 1 20							
- Hair Follic.Atrophy							
GRADE 3 : - - - 1							
TOTAL AFFECTED : - - - 1							
MEAN SEVERITY : - - - 3.0							
.....							

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ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST SYSTEM : RAT, 13-Week, Oral					DATE : 14-FEB-07			
SPONSOR : DSM Nutritional Products AG					PathData®System V6.2b5			
SUMMARY INCIDENCE OF GRADINGS BY ORGAN/GROUP/SEX								
STATUS AT NECROPSY: K0, INCL. DEATHS								
SEX :					FEMALE			
DOSE GROUP:					01	02	03	04
NO.ANIMALS:					20	20	20	20
SKIN/SUBCUTIS CONT'D.					20	—	1	20
— Tail, bone atrophy								
GRADE 1 :					—	—	1	1
TOTAL AFFECTED :					—	—	1	1
MEAN SEVERITY :					—	—	1.0	1.0
HARDERIAN GLANDS :					20	—	—	20
— Porphyrin Deposits								
GRADE 1 :					7	—	—	5
TOTAL AFFECTED :					7	—	—	5
MEAN SEVERITY :					1.0	—	—	1.0
.....								
— Inflammation								
GRADE 1 :					1	—	—	3
TOTAL AFFECTED :					1	—	—	3
MEAN SEVERITY :					1.0	—	—	1.0
.....								
— Atrophy								
GRADE 1 :					—	—	—	1
TOTAL AFFECTED :					—	—	—	1
MEAN SEVERITY :					—	—	—	1.0
SKELETAL MUSCLE :					20	—	—	20
— Lymphoid C.Infiltr.								
GRADE 1 :					2	—	—	—
TOTAL AFFECTED :					2	—	—	—
MEAN SEVERITY :					1.0	—	—	—

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT					PAGE	:	45/ 343	
SUMMARY TABLES					RCC	:	A29553	
TEST ARTICLE : ULTRAZINE FG-R					PATHOL. NO.: 11023 ROL			
TEST SYSTEM : RAT, 13-Week, Oral					DATE : 14-FEB-07			
SPONSOR : DSM Nutritional Products AG					PathData®System V6.2b5			
SUMMARY INCIDENCE OF GRADINGS BY ORGAN/GROUP/SEX								
STATUS AT NECROPSY: K0, INCL. DEATHS								
SEX :					FEMALE			
DOSE GROUP:					01	02	03	04
NO.ANIMALS:					20	20	20	20
BRONCHIAL LNN :					20	—	—	19
— Lymphoid Hyperplasia								
GRADE 1 :					1	—	—	—
TOTAL AFFECTED :					1	—	—	—
MEAN SEVERITY :					1.0	—	—	—
.....								
— Blood in sinuses								
GRADE 3 :					—	—	—	1
TOTAL AFFECTED :					—	—	—	1
MEAN SEVERITY :					—	—	—	3.0
PAROTID GLANDS :					20	—	—	20
— Inflammation								
GRADE 1 :					1	—	—	—
TOTAL AFFECTED :					1	—	—	—
MEAN SEVERITY :					1.0	—	—	—

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ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST SYSTEM : RAT, 13-Week, Oral					DATE : 14-FEB-07		
SPONSOR : DSM Nutritional Products AG					PathData®System V6.2b5		
SUMMARY INCIDENCE OF GRADINGS BY ORGAN/GROUP/SEX							
STATUS AT NECROPSY: R1							
SEX :					MALE		
DOSE GROUP:					01	02	03 04
NO.ANIMALS:					10	—	— 10
HEART :					10	—	— 10
— lymphoid C.Infiltr.							
GRADE 1 :					2	—	— 2
TOTAL AFFECTED :					2	—	— 2
MEAN SEVERITY :					1.0	—	— 1.0
TRACHEA :					10	—	— 10
— Glandular Ectasia							
GRADE 1 :					2	—	— 3
TOTAL AFFECTED :					2	—	— 3
MEAN SEVERITY :					1.0	—	— 1.0
LIVER :					10	—	— 10
— Lymphoid C.Infiltr.							
GRADE 1 :					10	—	— 10
TOTAL AFFECTED :					10	—	— 10
MEAN SEVERITY :					1.0	—	— 1.0
.....							
— Hematopoiesis							
GRADE 1 :					3	—	— —
TOTAL AFFECTED :					3	—	— —
MEAN SEVERITY :					1.0	—	— —
.....							
— Fatty change							
GRADE 1 :					8	—	— 8
TOTAL AFFECTED :					8	—	— 8
MEAN SEVERITY :					1.0	—	— 1.0

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SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

SUMMARY INCIDENCE OF GRADINGS BY ORGAN/GROUP/SEX
STATUS AT NECROPSY: R1

SEX	:					MALE
DOSE GROUP:		01	02	03	04	
NO. ANIMALS:		10	—	—	10	
<hr/>						
SPLEEN	:	10	—	—	10	
— Incr. Hemopoiesis						
GRADE 1	:	8	—	—	9	
TOTAL AFFECTED	:	8	—	—	9	
MEAN SEVERITY	:	1.0	—	—	1.0	
<hr/>						
MESENT. LYMPH NODE	:	10	—	—	10	
— Lymphoid hyperplasia						
GRADE 1	:	9	—	—	7	
TOTAL AFFECTED	:	9	—	—	7	
MEAN SEVERITY	:	1.0	—	—	1.0	
<hr/>						
— Foamy histiocytes						
GRADE 1	:	—	—	—	3	
GRADE 2	:	—	—	—	3	
GRADE 3	:	—	—	—	4	
TOTAL AFFECTED	:	—	—	—	10	
MEAN SEVERITY	:	—	—	—	2.1	
<hr/>						
KIDNEYS	:	10	—	—	10	
— Hyaline Droplets						
GRADE 1	:	7	—	—	5	
TOTAL AFFECTED	:	7	—	—	5	
MEAN SEVERITY	:	1.0	—	—	1.0	
<hr/>						
— Tubular Basophilia						
GRADE 1	:	2	—	—	2	
TOTAL AFFECTED	:	2	—	—	2	
MEAN SEVERITY	:	1.0	—	—	1.0	
<hr/>						

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SUMMARY INCIDENCE OF GRADINGS BY ORGAN/GROUP/SEX							
STATUS AT NECROPSY: R1							
SEX :					MALE		
DOSE GROUP:					01	02	03 04
NO.ANIMALS:					10	—	— 10
KIDNEYS CONT'D.					10	—	— 10
— Pelvic Dilation							
GRADE 1 :					1	—	— —
TOTAL AFFECTED :					1	—	— —
MEAN SEVERITY :					1.0	—	— —
.....							
— Tubular vacuolation							
GRADE 1 :					—	—	— 4
TOTAL AFFECTED :					—	—	— 4
MEAN SEVERITY :					—	—	— 1.0
PEYERS PATCHES JEJ. :					10	—	— 10
— Lymphoid Hyperplasia							
GRADE 1 :					8	—	— 7
TOTAL AFFECTED :					8	—	— 7
MEAN SEVERITY :					1.0	—	— 1.0
PEYERS PATCHES ILEUM :					10	—	— 10
— Lymphoid Hyperplasia							
GRADE 1 :					10	—	— 9
TOTAL AFFECTED :					10	—	— 9
MEAN SEVERITY :					1.0	—	— 1.0
COLON :					10	—	— 10
— Luminal dilation							
GRADE 1 :					3	—	— 1
TOTAL AFFECTED :					3	—	— 1
MEAN SEVERITY :					1.0	—	— 1.0

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SUMMARY INCIDENCE OF GRADINGS BY ORGAN/GROUP/SEX							
STATUS AT NECROPSY: R1							
SEX :					MALE		
DOSE GROUP:					01	02	03 04
NO.ANIMALS:					10	—	— 10
<hr/>							
RECTUM :					10	—	— 10
— Luminal dilation							
GRADE 1 :					2	—	—
GRADE 2 :					—	—	— 1
TOTAL AFFECTED :					2	—	— 1
MEAN SEVERITY :					1.0	—	— 2.0
<hr/>							
LUNGS :					10	—	— 10
— Vascular Mineraliz.							
GRADE 1 :					7	—	— 3
TOTAL AFFECTED :					7	—	— 3
MEAN SEVERITY :					1.0	—	— 1.0
<hr/>							
THYMUS :					10	—	— 10
— Hemorrhage							
GRADE 1 :					—	—	— 2
TOTAL AFFECTED :					—	—	— 2
MEAN SEVERITY :					—	—	— 1.0
<hr/>							
.....							
— Atrophy							
GRADE 1 :					—	—	— 3
TOTAL AFFECTED :					—	—	— 3
MEAN SEVERITY :					—	—	— 1.0
<hr/>							
TESTES :					10	—	— 10
— Spermat.Giant Cells							
GRADE 1 :					—	—	— 1
TOTAL AFFECTED :					—	—	— 1
MEAN SEVERITY :					—	—	— 1.0

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SUMMARY INCIDENCE OF GRADINGS BY ORGAN/GROUP/SEX							
STATUS AT NECROPSY: R1							
SEX :					MALE		
DOSE GROUP:					01	02	03 04
NO.ANIMALS:					10	-	- 10
EPIDIDYMIDES :					10	-	- 10
- Tubular Vacuolation							
GRADE 1 :					-	-	- 1
TOTAL AFFECTED :					-	-	- 1
MEAN SEVERITY :					-	-	- 1.0
MANDIB.LYMPH NODES :					10	-	- 10
- Lymphoid Hyperplasia							
GRADE 1 :					7	-	- 8
TOTAL AFFECTED :					7	-	- 8
MEAN SEVERITY :					1.0	-	- 1.0
ADRENAL CORTICES :					10	-	- 10
- Fatty change							
GRADE 1 :					7	-	- 4
GRADE 2 :					1	-	- 3
TOTAL AFFECTED :					8	-	- 7
MEAN SEVERITY :					1.1	-	- 1.4
SCIATIC NERVE, LEFT :					10	-	- 10
- Nerve Fiber Degener.							
GRADE 1 :					2	-	- 3
TOTAL AFFECTED :					2	-	- 3
MEAN SEVERITY :					1.0	-	- 1.0
SKIN/SUBCUTIS :					10	-	- 10
- Cartilage regenerat.							
GRADE 1 :					-	-	- 1
TOTAL AFFECTED :					-	-	- 1
MEAN SEVERITY :					-	-	- 1.0

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SUMMARY INCIDENCE OF GRADINGS BY ORGAN/GROUP/SEX							
STATUS AT NECROPSY: R1							
SEX :					MALE		
DOSE GROUP:					01	02	03 04
NO.ANIMALS:					10	—	— 10
SKIN/SUBCUTIS CONT'D.					10	—	— 10
— Focal fibrosis							
GRADE 1 :					—	—	— 1
TOTAL AFFECTED :					—	—	— 1
MEAN SEVERITY :					—	—	— 1.0
EYES :					10	—	— 10
— Lens degeneration							
GRADE 1 :					1	—	— —
TOTAL AFFECTED :					1	—	— —
MEAN SEVERITY :					1.0	—	— —
HARDERIAN GLANDS :					10	—	— 10
— Porphyrin Deposits							
GRADE 1 :					6	—	— 2
TOTAL AFFECTED :					6	—	— 2
MEAN SEVERITY :					1.0	—	— 1.0
.....							
— Inflammation							
GRADE 1 :					1	—	— —
TOTAL AFFECTED :					1	—	— —
MEAN SEVERITY :					1.0	—	— —

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SPONSOR : DSM Nutritional Products AG					PathData®System V6.2b5		
SUMMARY INCIDENCE OF GRADINGS BY ORGAN/GROUP/SEX							
STATUS AT NECROPSY: R1							
SEX :					FEMALE		
DOSE GROUP:					01	02	03 04
NO.ANIMALS:					10	—	— 10
TRACHEA : 10					—	—	10
- Glandular Ectasia							
GRADE 1 :					4	—	— 1
TOTAL AFFECTED :					4	—	— 1
MEAN SEVERITY :					1.0	—	— 1.0
LIVER : 10					—	—	10
- Lymphoid C.Infiltr.							
GRADE 1 :					10	—	— 10
TOTAL AFFECTED :					10	—	— 10
MEAN SEVERITY :					1.0	—	— 1.0
.....							
- Hematopoiesis							
GRADE 1 :					5	—	— —
TOTAL AFFECTED :					5	—	— —
MEAN SEVERITY :					1.0	—	— —
.....							
- Fatty change							
GRADE 1 :					8	—	— 7
TOTAL AFFECTED :					8	—	— 7
MEAN SEVERITY :					1.0	—	— 1.0
SPLEEN : 10					—	—	10
- Incr.Hemopoiesis							
GRADE 1 :					10	—	— 9
GRADE 2 :					—	—	— 1
TOTAL AFFECTED :					10	—	— 10
MEAN SEVERITY :					1.0	—	— 1.1

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SUMMARY INCIDENCE OF GRADINGS BY ORGAN/GROUP/SEX
STATUS AT NECROPSY: R1

SEX :					FEMALE
DOSE GROUP:	01	02	03	04	
NO. ANIMALS:	10	—	—	10	
MESENT. LYMPH NODE :	10	—	—	10	
— Lymphoid hyperplasia					
GRADE 1 :	9	—	—	5	
GRADE 2 :	1	—	—	—	
TOTAL AFFECTED :	10	—	—	5	
MEAN SEVERITY :	1.1	—	—	1.0	
.....					
— Focal sinus.ectasia					
GRADE 1 :	1	—	—	—	
TOTAL AFFECTED :	1	—	—	—	
MEAN SEVERITY :	1.0	—	—	—	
.....					
— Foamy histiocytes					
GRADE 1 :	—	—	—	5	
GRADE 2 :	—	—	—	2	
GRADE 3 :	—	—	—	3	
TOTAL AFFECTED :	—	—	—	10	
MEAN SEVERITY :	—	—	—	1.8	
.....					
KIDNEYS :	10	—	—	10	
— Mineralization					
GRADE 1 :	3	—	—	4	
TOTAL AFFECTED :	3	—	—	4	
MEAN SEVERITY :	1.0	—	—	1.0	
.....					
— Pyelitis					
GRADE 3 :	—	—	—	1	
TOTAL AFFECTED :	—	—	—	1	
MEAN SEVERITY :	—	—	—	3.0	
.....					

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SUMMARY INCIDENCE OF GRADINGS BY ORGAN/GROUP/SEX							
STATUS AT NECROPSY: R1							
SEX :					FEMALE		
DOSE GROUP:					01	02	03 04
NO. ANIMALS:					10	—	— 10
<hr/>							
KIDNEYS CONT'D.					10	—	— 10
— Transit.C.Hyperpl.							
GRADE 3 :					—	—	— 1
TOTAL AFFECTED :					—	—	— 1
MEAN SEVERITY :					—	—	— 3.0
.....							
— Tubular vacuolation							
GRADE 1 :					—	—	— 5
TOTAL AFFECTED :					—	—	— 5
MEAN SEVERITY :					—	—	— 1.0
<hr/>							
STOMACH :					10	—	— 10
— Glandular dilation							
GRADE 1 :					1	—	— —
TOTAL AFFECTED :					1	—	— —
MEAN SEVERITY :					1.0	—	— —
.....							
— Gld.Stomach Erosion							
GRADE 1 :					—	—	— 1
TOTAL AFFECTED :					—	—	— 1
MEAN SEVERITY :					—	—	— 1.0
<hr/>							
PEYERS PATCHES JEJ. :					10	—	— 10
— Lymphoid Hyperplasia							
GRADE 1 :					7	—	— 2
TOTAL AFFECTED :					7	—	— 2
MEAN SEVERITY :					1.0	—	— 1.0

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SUMMARY INCIDENCE OF GRADINGS BY ORGAN/GROUP/SEX							
STATUS AT NECROPSY: R1							
SEX :					FEMALE		
DOSE GROUP:					01	02	03 04
NO.ANIMALS:					10	—	— 10
PEYERS PATCHES ILEUM :					10	—	— 10
- Lymphoid Hyperplasia							
GRADE 1 :					9	—	— 4
TOTAL AFFECTED :					9	—	— 4
MEAN SEVERITY :					1.0	—	— 1.0
COLON :					10	—	— 10
- Luminal dilation							
GRADE 1 :					1	—	— 7
TOTAL AFFECTED :					1	—	— 7
MEAN SEVERITY :					1.0	—	— 1.0
RECTUM :					10	—	— 10
- Luminal dilation							
GRADE 1 :					—	—	— 1
GRADE 2 :					—	—	— 1
GRADE 3 :					—	—	— 1
TOTAL AFFECTED :					—	—	— 3
MEAN SEVERITY :					—	—	— 2.0
LUNGS :					10	—	— 10
- Vascular Mineraliz.							
GRADE 1 :					4	—	— 2
TOTAL AFFECTED :					4	—	— 2
MEAN SEVERITY :					1.0	—	— 1.0
THYMUS :					10	—	— 10
- Hemorrhage							
GRADE 2 :					—	—	— 1
TOTAL AFFECTED :					—	—	— 1
MEAN SEVERITY :					—	—	— 2.0

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SUMMARY INCIDENCE OF GRADINGS BY ORGAN/GROUP/SEX							
STATUS AT NECROPSY: R1							
SEX :					FEMALE		
DOSE GROUP:					01	02	03 04
NO.ANIMALS:					10	—	— 10
THYMUS CONT'D.					10	—	— 10
— Atrophy							
GRADE 1 :					—	—	— 1
TOTAL AFFECTED :					—	—	— 1
MEAN SEVERITY :					—	—	— 1.0
OVARIES :					10	—	— 10
— Stromal C.Hyperpl.							
GRADE 1 :					4	—	— 9
GRADE 2 :					—	—	— 1
TOTAL AFFECTED :					4	—	— 10
MEAN SEVERITY :					1.0	—	— 1.1
MANDIB.LYMPH NODES :					10	—	— 10
— Lymphoid Hyperplasia							
GRADE 1 :					5	—	— 8
TOTAL AFFECTED :					5	—	— 8
MEAN SEVERITY :					1.0	—	— 1.0
ADRENAL CORTICES :					10	—	— 10
— Fatty change							
GRADE 1 :					3	—	— 2
TOTAL AFFECTED :					3	—	— 2
MEAN SEVERITY :					1.0	—	— 1.0
SCIATIC NERVE, LEFT :					10	—	— 10
— Nerve Fiber Degener.							
GRADE 1 :					1	—	— 3
TOTAL AFFECTED :					1	—	— 3
MEAN SEVERITY :					1.0	—	— 1.0

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SUMMARY INCIDENCE OF GRADINGS BY ORGAN/GROUP/SEX							
STATUS AT NECROPSY: R1							
SEX :					FEMALE		
DOSE GROUP:					01	02	03 04
NO.ANIMALS:					10	—	— 10
HARDERIAN GLANDS : 10 — — 10							
— Porphyrin Deposits							
GRADE 1 :					5	—	— 2
TOTAL AFFECTED :					5	—	— 2
MEAN SEVERITY :					1.0	—	— 1.0
.....							
— Inflammation							
GRADE 1 :					2	—	— 1
TOTAL AFFECTED :					2	—	— 1
MEAN SEVERITY :					1.0	—	— 1.0
SKELETAL MUSCLE : 10 — — 10							
— Lymphoid C.Infiltr.							
GRADE 1 :					—	—	— 1
TOTAL AFFECTED :					—	—	— 1
MEAN SEVERITY :					—	—	— 1.0
PAROTID GLANDS : 10 — — 10							
— Inflammation							
GRADE 1 :					1	—	— —
TOTAL AFFECTED :					1	—	— —
MEAN SEVERITY :					1.0	—	— —

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CORRELATION TABLE: NECROPSY – MICROSCOPY	DOSE GROUP 01, MALE
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NECROPSY OBSERVATION	CORRESPONDING MICROSCOPIC FINDING
----------------------	-----------------------------------

	ANIMAL NO:	3
.....		
THYMUS		
– 01: FOCUS/FOCI, ISOLATED, D=1 MM,	– Hemorrhage, focal, grade 1.	
DARK RED.		
.....		
	ANIMAL NO:	4
.....		
THYMUS		
– 01: FOCUS/FOCI, SEVERAL, D=1 MM,	– Hemorrhage, focal, grade 1.	
DARK RED.		
.....		
	ANIMAL NO:	5
.....		
SKIN/SUBCUTIS		
– 01: TIP OF TAIL: DEJECTED.	– Tail, bone atrophy, grade 1.	
.....		
	ANIMAL NO:	7
.....		
THYMUS		
– 01: FOCUS/FOCI, SEVERAL, D=1 MM,	– Hemorrhage, focal, grade 1.	
DARK RED.		
.....		
	ANIMAL NO:	9
.....		
THYMUS		
– 01: FOCUS/FOCI, SEVERAL, D=1 MM,	– Hemorrhage, multifocal, grade 1.	
DARK RED.		
.....		

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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<i>TEST ARTICLE</i> : ULTRAZINE FG-R	<i>PATHOL. NO.:</i> 11023 ROL
<i>TEST SYSTEM</i> : RAT, 13-Week, Oral	<i>DATE</i> : 14-FEB-07
<i>SPONSOR</i> : DSM Nutritional Products AG	<i>PathData®System</i> V6.2b5

CORRELATION TABLE: NECROPSY – MICROSCOPY	DOSE GROUP 01, MALE
--	---------------------

NECROPSY OBSERVATION	CORRESPONDING MICROSCOPIC FINDING
----------------------	-----------------------------------

	ANIMAL NO:	11
	
THYMUS		
– 01: FOCUS/FOCI, ISOLATED, D=1 MM, DARK RED.	– Hemorrhage, focal, grade 1.	
PROSTATE GLAND		
– 01: FOCUS/FOCI, SEVERAL, D=2 MM, GRAY WHITE.	– Nothing abnormal discovered.	
.....		
	ANIMAL NO:	18
	
TESTES		
– 01: BOTH SIDES: REDUCED IN SIZE, D=12X8 MM.	– Tubular atrophy, bilateral, grade 4.	
EPIDIDYMIDES		
– 01: BOTH SIDES: REDUCED IN SIZE.	– Intratubular cellular debris, bilateral, grade 3. Fibrosis, interstitial, bilateral, grade 2.	
.....		
	ANIMAL NO:	20
	
THYMUS		
– 01: FOCUS/FOCI, SEVERAL, D=1 MM, DARK RED.	– Hemorrhage, multifocal, grade 1.	
.....		
	ANIMAL NO:	25
	
KIDNEYS		
– 01: RIGHT SIDE: PELVIC DILATION.	– Pelvic dilation, bilateral, grade 1.	
.....		

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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CORRELATION TABLE: NECROPSY – MICROSCOPY	DOSE GROUP 01, MALE
--	---------------------

NECROPSY OBSERVATION	CORRESPONDING MICROSCOPIC FINDING
----------------------	-----------------------------------

ANIMAL NO: 28
.....

EYES	
– 01: RIGHT SIDE: DISCOLORATION, GRAY WHITE.	– Lens degeneration, bilateral, grade 1.
.....

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CORRELATION TABLE: NECROPSY – MICROSCOPY	DOSE GROUP 01, FEMALE
--	-----------------------

NECROPSY OBSERVATION	CORRESPONDING MICROSCOPIC FINDING
----------------------	-----------------------------------

	ANIMAL NO: 128

THYMUS	
– 01: FOCUS/FOCI, SEVERAL, D=1 MM, DARK RED.	– Nothing abnormal discovered.
.....	
	ANIMAL NO: 129

STOMACH	
– 01: FUNDUS, MUCOSA: FOCUS/FOCI, ISOLATED, D=2 MM, DARK RED.	– Congestion, focal.
THYMUS	
– 01: DISCOLORATION, DARK RED.	– Congestion, diffuse.
OVARIES	
– 01: BOTH SIDES: DISCOLORATION, DARK RED.	– Congestion, multifocal, bilateral.
MANDIBULAR LYMPH NODES	
– 01: DISCOLORATION, REDDISH.	– Congestion, diffuse, unilateral.
UTERUS	
– 01: BOTH HORNS: DISCOLORATION, DARK RED.	– Congestion, multifocal.
.....	
	ANIMAL NO: 133

OVARIES	
– 01: BOTH SIDES: DISCOLORATION, DARK RED.	– Congestion, bilateral.
.....	

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CORRELATION TABLE: NECROPSY – MICROSCOPY	DOSE GROUP 01, FEMALE
--	-----------------------

NECROPSY OBSERVATION	CORRESPONDING MICROSCOPIC FINDING
----------------------	-----------------------------------

	ANIMAL NO:	142
	
OVARIES		
– 01: RIGHT SIDE: DISCOLORATION,	– Congestion, bilateral.	
DARK RED.		
.....		
	ANIMAL NO:	143
	
THYMUS		
– 01: FOCUS/FOCI, SEVERAL, D=1 MM,	– Hemorrhage, multifocal, grade 1.	
DARK RED.		
.....		

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CORRELATION TABLE: NECROPSY – MICROSCOPY	DOSE GROUP 02, MALE
--	---------------------

NECROPSY OBSERVATION	CORRESPONDING MICROSCOPIC FINDING
----------------------	-----------------------------------

	ANIMAL NO:	39
	
KIDNEYS		
– 01: RIGHT SIDE: REDUCED IN SIZE,	– Nothing abnormal discovered.	
D=15X8 MM.		
.....		
	ANIMAL NO:	40
	
THYMUS		
– 01: FOCUS/FOCI, SEVERAL, D=1 MM,	– Hemorrhage, multifocal, grade 1.	
DARK RED.		
.....		
	ANIMAL NO:	41
	
KIDNEYS		
– 01: RIGHT SIDE: PELVIC DILATION.	– Pelvic dilation, unilateral,	
	grade 1.	
.....		
	ANIMAL NO:	42
	
THYMUS		
– 01: FOCUS/FOCI, SEVERAL, D=1 MM,	– Hemorrhage, multifocal, grade 1.	
DARK RED.		
.....		
	ANIMAL NO:	43
	
LYMPH NODES		
– 01: ILIAC, RIGHT SIDE: CYST(S), D=	– Cowper's glands, bilateral.	
6 MM, WATERY-CLEAR.		
.....		

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CORRELATION TABLE: NECROPSY – MICROSCOPY	DOSE GROUP 02, MALE
--	---------------------

NECROPSY OBSERVATION	CORRESPONDING MICROSCOPIC FINDING
----------------------	-----------------------------------

ANIMAL NO: 44

KIDNEYS	
– 01: BOTH SIDES: ENLARGED, D=30X26 MM.	– Polycystic kidney, bilateral, grade 4.
– 02: BOTH SIDES: GRANULATED SURFACE, TAN.	– Polycystic kidney, bilateral, grade 4.
DUODENUM	
– 01: CONTENTS BLACK-BROWN.	– Nothing abnormal discovered.
JEJUNUM	
– 01: CONTENTS BLACK-BROWN.	– Nothing abnormal discovered.
ILEUM	
– 01: CONTENTS BLACK-BROWN.	– Nothing abnormal discovered.
– 02: INTUSSUSCEPTION, L=15 MM.	– Intussusception, agonal.
PANCREAS	
– 01: DISCOLORATION, GRAY WHITE.	– Nothing abnormal discovered.

ANIMAL NO: 45

STOMACH	
– 01: FUNDUS, MUCOSA: FOCUS/FOCI, ISOLATED, D=2 MM, REDDISH.	– Congestion, focal.

ANIMAL NO: 46

KIDNEYS	
– 01: LEFT SIDE: PELVIC DILATION.	– Pelvic dilation, unilateral, grade 1.
SEMINAL VESICLES	
– 01: BOTH SIDES: FOCUS/FOCI, ISOLATED, D=1 MM, DARK RED.	– Congestion, multifocal, bilateral.

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CORRELATION TABLE: NECROPSY – MICROSCOPY	DOSE GROUP 02, MALE
--	---------------------

NECROPSY OBSERVATION	CORRESPONDING MICROSCOPIC FINDING
----------------------	-----------------------------------

	ANIMAL NO:	49
	
THYMUS		
– 01: FOCUS/FOCI, SEVERAL, D=1 MM,	– Congestion, multifocal.	
DARK RED.		
.....		
	ANIMAL NO:	50
	
THYMUS		
– 01: FOCUS/FOCI, ISOLATED, D=1 MM,	– Congestion, focal.	
DARK RED.		
.....		
	ANIMAL NO:	52
	
THYMUS		
– 01: FOCUS/FOCI, SEVERAL, D=1 MM,	– Hemorrhage, multifocal, grade 1.	
DARK RED.		
.....		
	ANIMAL NO:	54
	
SKIN/SUBCUTIS		
– 01: TIP OF TAIL: DEJECTED.	– Tail, bone atrophy, grade 1.	
.....		

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CORRELATION TABLE: NECROPSY – MICROSCOPY	DOSE GROUP 02, FEMALE
--	-----------------------

NECROPSY OBSERVATION	CORRESPONDING MICROSCOPIC FINDING
----------------------	-----------------------------------

	ANIMAL NO: 161

KIDNEYS	
– 01: RIGHT SIDE: PELVIC DILATION.	– Pelvic dilation, unilateral, grade 1.
.....	
	ANIMAL NO: 162

KIDNEYS	
– 01: RIGHT SIDE: PELVIC DILATION.	– Pelvic dilation, unilateral, grade 1.
.....	
	ANIMAL NO: 166

THYMUS	
– 01: FOCUS/FOCI, SEVERAL, D=1 MM, DARK RED.	– Hemorrhage, focal, grade 1.
.....	
	ANIMAL NO: 169

UTERUS	
– 01: BOTH HORNS: DISCOLORATION, REDDISH.	– Congestion, focal.
.....	
	ANIMAL NO: 171

THYMUS	
– 01: FOCUS/FOCI, ISOLATED, D=1 MM, DARK RED.	– Hemorrhage, grade 1.
.....	

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CORRELATION TABLE: NECROPSY – MICROSCOPY	DOSE GROUP 02, FEMALE
--	-----------------------

NECROPSY OBSERVATION	CORRESPONDING MICROSCOPIC FINDING
----------------------	-----------------------------------

	ANIMAL NO: 172
THYMUS
– 01: DISCOLORATION, DARK RED.	– Hemorrhage, multifocal, grade 2.
MAMMARY GLAND	
– 01: LEFT SIDE: NODULE(S), D=35X25	– Adenocarcinoma (malignant
MM, GRAY WHITE, FIRM.	neoplasm).
.....	
	ANIMAL NO: 173
THYMUS
– 01: FOCUS/FOCI, ISOLATED, D=1 MM,	– Hemorrhage, focal, grade 1.
DARK RED.	
.....	
	ANIMAL NO: 177
OVARIES
– 01: RIGHT SIDE: DISCOLORATION,	– Congestion, bilateral.
DARK RED.	
.....	
	ANIMAL NO: 178
THYMUS
– 01: FOCUS/FOCI, SEVERAL, D=1 MM,	– Hemorrhage, grade 1.
DARK RED.	
.....	
	ANIMAL NO: 179
THYMUS
– 01: FOCUS/FOCI, D=4 MM, DARK RED.	– Hemorrhage, multifocal, grade 1.
.....	

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CORRELATION TABLE: NECROPSY — MICROSCOPY	DOSE GROUP 02, FEMALE
--	-----------------------

NECROPSY OBSERVATION

CORRESPONDING MICROSCOPIC FINDING

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ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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CORRELATION TABLE: NECROPSY – MICROSCOPY	DOSE GROUP 03, MALE
--	---------------------

NECROPSY OBSERVATION	CORRESPONDING MICROSCOPIC FINDING
----------------------	-----------------------------------

	ANIMAL NO:	65
	
THYMUS		
– 01: FOCUS/FOCI, SEVERAL, D=1 MM,	– Hemorrhage, multifocal, grade 1.	
DARK RED.		
.....		
	ANIMAL NO:	66
	
LUNGS		
– 01: LEFT LOBE: FOCUS/FOCI,	– Nothing abnormal discovered.	
ISOLATED, D=2 MM, REDDISH.		
.....		
	ANIMAL NO:	67
	
THYMUS		
– 01: FOCUS/FOCI, D=4 MM, DARK RED.	– Hemorrhage, multifocal, grade 1.	
LYMPH NODES		
– 01: MEDIASTINAL: DISCOLORATION,	– Hemorrhage, multifocal,	
DARK RED.	bilateral, grade 2.	
.....		
	ANIMAL NO:	69
	
THYMUS		
– 01: FOCUS/FOCI, ISOLATED, D=4 MM,	– Hemorrhage, focal, grade 1.	
DARK RED.		
.....		
	ANIMAL NO:	70
	
KIDNEYS		
– 01: RIGHT SIDE: PELVIC DILATION.	– Pelvic dilation, unilateral,	
	grade 1.	

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CORRELATION TABLE: NECROPSY – MICROSCOPY	DOSE GROUP 03, MALE
--	---------------------

NECROPSY OBSERVATION	CORRESPONDING MICROSCOPIC FINDING
----------------------	-----------------------------------

.....

ANIMAL NO: 71

.....

KIDNEYS	
– 01: LEFT SIDE: PELVIC DILATION.	– Pelvic dilation, unilateral, grade 1.
TESTES	
– 01: RIGHT SIDE: REDUCED IN SIZE, D=14X8 MM.	– Tubular atrophy, diffuse, bilateral, grade 4.

.....

ANIMAL NO: 79

.....

KIDNEYS	
– 01: LEFT SIDE: PELVIC DILATION.	– Pelvic dilation, unilateral, grade 1.

.....

ANIMAL NO: 80

.....

KIDNEYS	
– 01: LEFT SIDE: PELVIC DILATION.	– Pelvic dilation, unilateral, grade 1.

.....

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CORRELATION TABLE: NECROPSY – MICROSCOPY	DOSE GROUP 03, FEMALE
--	-----------------------

NECROPSY OBSERVATION	CORRESPONDING MICROSCOPIC FINDING
----------------------	-----------------------------------

	ANIMAL NO: 188
THYMUS
– 01: FOCUS/FOCI, SEVERAL, D=1 MM, DARK RED.	– Hemorrhage, multifocal, grade 1.
.....	
	ANIMAL NO: 189
SKIN/SUBCUTIS
– 01: TIP OF TAIL: DEJECTED.	– Tail, bone atrophy, grade 1.
.....	
	ANIMAL NO: 190
PANCREAS
– 01: DISCOLORATION, REDDISH.	– Congestion, focal.
.....	
	ANIMAL NO: 199
KIDNEYS
– 01: LEFT SIDE: PELVIC DILATION.	– Pelvic dilation, unilateral, grade 1.
.....	
	ANIMAL NO: 205
UTERUS
– 01: RIGHT HORN: DISCOLORATION, REDDISH.	– Congestion, diffuse.
.....	

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RCC STUDY NUMBER A29553 REPORT
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CORRELATION TABLE: NECROPSY – MICROSCOPY	DOSE GROUP 04, MALE
--	---------------------

NECROPSY OBSERVATION	CORRESPONDING MICROSCOPIC FINDING
----------------------	-----------------------------------

	ANIMAL NO:	93
	
THYMUS		
– 01: FOCUS/FOCI, SEVERAL, D=1 MM,	– Hemorrhage, multifocal, grade 1.	
DARK RED.		
.....		
	ANIMAL NO:	94
	
KIDNEYS		
– 01: RIGHT SIDE: PELVIC DILATION.	– Pelvic dilation, bilateral,	
	grade 2.	
THYMUS		
– 01: FOCUS/FOCI, ISOLATED, D=1 MM,	– Hemorrhage, focal, grade 1.	
REDDISH.		
.....		
	ANIMAL NO:	95
	
THYMUS		
– 01: DISCOLORATION, REDDISH.	– Congestion.	
.....		
	ANIMAL NO:	98
	
BRONCHIAL LYMPH NODE		
– 01: DISCOLORATION, REDDISH.	– Hemorrhage, focal, grade 1.	
.....		
	ANIMAL NO:	100
	
THYMUS		
– 01: FOCUS/FOCI, SEVERAL, D=1 MM,	– Congestion, multifocal.	
DARK RED.		
.....		

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RCC STUDY NUMBER A29553 REPORT
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CORRELATION TABLE: NECROPSY – MICROSCOPY	DOSE GROUP 04, MALE
--	---------------------

NECROPSY OBSERVATION	CORRESPONDING MICROSCOPIC FINDING
----------------------	-----------------------------------

	ANIMAL NO: 102

KIDNEYS	
– 01: RIGHT SIDE: PELVIC DILATION.	– Pelvic dilation, bilateral, grade 1.
.....
	ANIMAL NO: 104

KIDNEYS	
– 01: PELVIC DILATION.	– Pelvic dilation, bilateral, grade 1.
.....
	ANIMAL NO: 105

THYMUS	
– 01: FOCUS/FOCI, SEVERAL, D=1 MM, DARK RED.	– Hemorrhage, multifocal, grade 1.
.....
	ANIMAL NO: 110

STOMACH	
– 01: FUNDUS, MUCOSA: DISCOLORATION, REDDISH.	– Congestion, focal.
THYMUS	
– 01: REDUCED IN SIZE.	– Atrophy, grade 1.
.....
	ANIMAL NO: 113

SKIN/SUBCUTIS	
– 01: AURICLE, LEFT SIDE: RUPTURE (S).	– Auric.regene.changes, grade 1. Focal fibrosis, grade 1.

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CORRELATION TABLE: NECROPSY — MICROSCOPY	DOSE GROUP 04, MALE
--	---------------------

NECROPSY OBSERVATION	CORRESPONDING MICROSCOPIC FINDING
----------------------	-----------------------------------

.....

ANIMAL NO: 114

.....

THYMUS

— 01: FOCUS/FOCI, SEVERAL, D=1 MM, — Hemorrhage, grade 1.
DARK RED.

.....

ANIMAL NO: 115

.....

THYMUS

— 01: FOCUS/FOCI, SEVERAL, D=1 MM, — Hemorrhage, focal, grade 1.
DARK RED.

— 02: REDUCED IN SIZE. — Atrophy, focal, grade 1.

.....

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CORRELATION TABLE: NECROPSY – MICROSCOPY	DOSE GROUP 04, FEMALE
--	-----------------------

NECROPSY OBSERVATION	CORRESPONDING MICROSCOPIC FINDING
----------------------	-----------------------------------

	ANIMAL NO: 217

THYMUS	
– 01: FOCUS/FOCI, SEVERAL, D=1 MM, DARK RED.	– Hemorrhage, multifocal, grade 1.
BODY CAVITIES	
– 01: UTERINE ADIPOSE TISSUE, RIGHT SIDE: NODULE(S), D=5 MM, YELLOWISH, FIRM.	– Nothing abnormal discovered.
.....	
	ANIMAL NO: 219

LIVER	
– 01: LOBE INFRAPORTALIS: NODULE(S), D=10 MM, DARK RED, FIRM.	– Necrosis, focal with hemorrhage, grade 3.
OVARIES	
– 01: RIGHT SIDE: DISCOLORATION, DARK RED.	– Congestion, bilateral.
PANCREAS	
– 01: DISCOLORATION, DARK RED.	– Congestion, multifocal.
.....	
	ANIMAL NO: 221

THYMUS	
– 01: FOCUS/FOCI, SEVERAL, D=1 MM, DARK RED.	– Congestion, multifocal.
.....	
	ANIMAL NO: 222

THYMUS	
– 01: FOCUS/FOCI, SEVERAL, D=1 MM, DARK RED.	– Hemorrhage, multifocal, grade 1.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	76/ 343
SUMMARY TABLES	RCC	:	A29553

TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

CORRELATION TABLE: NECROPSY – MICROSCOPY	DOSE GROUP 04, FEMALE
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NECROPSY OBSERVATION	CORRESPONDING MICROSCOPIC FINDING
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.....	ANIMAL NO: 228
.....

THYMUS	
- 01: FOCUS/FOCI, ISOLATED, D=1 MM,	- Hemorrhage, focal, grade 1.
DARK RED.	
.....	

.....	ANIMAL NO: 231
.....

THYMUS	
- 01: DISCOLORATION, DARK RED.	- Congestion, diffuse.
SKIN/SUBCUTIS	
- 01: TIP OF TAIL: DEJECTED.	- Tail, bone atrophy, grade 1.
.....	

.....	ANIMAL NO: 232
.....

SKIN/SUBCUTIS	
- 01: FORELEG, BOTH SIDES: ALOPECIA,	- Hair follicle atrophy, grade 3.
D=20X10 MM, MARKED.	
.....	

.....	ANIMAL NO: 239
.....

THYMUS	
- 01: REDUCED IN SIZE.	- Nothing abnormal discovered.
.....	

.....	ANIMAL NO: 241
.....

THYMUS	
- 01: DISCOLORATION, DARK RED.	- Hemorrhage, grade 2.
MANDIBULAR LYMPH NODES	
- 01: DISCOLORATION, REDDISH.	- Congestion, diffuse, unilateral.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	77/ 343
SUMMARY TABLES	RCC	:	A29553

<i>TEST ARTICLE</i>	:	ULTRAZINE FG-R	<i>PATHOL. NO.:</i>	11023 ROL
<i>TEST SYSTEM</i>	:	RAT, 13-Week, Oral	<i>DATE</i>	: 14-FEB-07
<i>SPONSOR</i>	:	DSM Nutritional Products AG	<i>PathData®System</i>	V6.2b5

CORRELATION TABLE: NECROPSY — MICROSCOPY	DOSE GROUP 04, FEMALE
--	-----------------------

NECROPSY OBSERVATION	CORRESPONDING MICROSCOPIC FINDING
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.....

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	78/ 343
	RCC	:	A29553

TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

EXPLANATION OF CODES AND SYMBOLS

CODES AND SYMBOLS USED AT ANIMAL LEVEL:

M = Male animal
F = Female animal
K0 = Terminal sacrifice group
R1...R9 = Recovery / post-treatment group 1...9
+ = Intercurrent death/sacrificed moribund
+2 = Sacrificed moribund

CODES AND SYMBOLS USED AT ORGAN LEVEL:

G = Gross observation checked off histologically
0 = Tissue not present for histologic examination
' = Histologic examination not required
+ = Organ examined, findings present
- = Organ examined, no pathologic findings noted (AOFT only)
(= Only one of paired organs examined/present

CODES AND SYMBOLS USED AT FINDING LEVEL:

GRADE 1 = Minimal / very few / very small
GRADE 2 = Slight / few / small
GRADE 3 = Moderate / moderate number / moderate size
GRADE 4 = Marked / many / large
P = Finding present, severity not scored
N0 = Malignant neoplasm
(= Finding unilateral in paired organs

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 79/ 343
INDIVIDUAL ANIMAL DATA RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 01, 0 MG/KG/DAY

ANIMAL NUMBER :	1	2	3	4	5	6	7	8	9	10
	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO
HEART	-	-	+	-	-	+	-	-	-	-
- lymphoid C.Infiltr.	.	.	1.	.	.	1.
AORTA	-	-	-	-	-	-	-	-	-	-
TRACHEA	+	-	-	-	+	-	-	-	-	+
- Glandular Ectasia	1.	.	.	.	1.	1.
ESOPHAGUS	-	-	-	-	-	-	-	-	-	-
LIVER	+	+	+	+	+	+	+	+	+	+
- Lymphoid C.Infiltr.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
- Fatty change	.	1.	.	1.	.	.	.	1.	1.	.
SPLEEN	+	+	+	+	+	+	+	+	+	+
- Incr.Hemopoiesis	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
MESENT. LYMPH NODE	+	+	+	+	-	+	+	-	+	-
- Lymphoid hyperplasia	1.	1.	1.	1.	.	1.	1.	.	1.	.
KIDNEYS	+	-	+	-	+	+	+	+	+	+
- Hyaline Droplets	1.	.	1.	.	1.	1.	.	1.	1.	1.
- Tubular Basophilia	(1.	1.	.	.
URINARY BLADDER	-	-	-	-	-	-	-	-	-	-
STOMACH	-	-	-	-	-	-	-	-	-	-
DUODENUM	-	-	-	-	-	-	-	-	-	-
JEJUNUM	-	-	-	-	-	-	-	-	-	-
PEYERS PATCHES JEJ.	+	+	+	+	-	-	+	+	+	+
- Lymphoid Hyperplasia	1.	1.	1.	1.	.	.	1.	1.	1.	1.
ILEUM	-	-	-	-	-	-	-	-	-	-

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

**PATHOLOGY REPORT
INDIVIDUAL ANIMAL DATA**

PAGE : 80/ 343
RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R
TEST SYSTEM : RAT, 13-Week, Oral
SPONSOR : DSM Nutritional Products AG
PATHOL. NO.: 11023 ROL
DATE : 14-FEB-07
PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 01, 0 MG/KG/DAY

ANIMAL NUMBER :

	1	2	3	4	5	6	7	8	9	10
	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO
PEYERS PATCHES ILEUM	+	+	+	+	-	-	+	+	+	+
- Lymphoid Hyperplasia	1.	1.	1.	1.	.	.	1.	1.	1.	1.
- Mineralization	.	.	1.	1.
.....										
COLON	-	-	-	-	-	-	-	-	-	-
.....										
CECUM	-	-	-	-	-	-	-	-	-	-
.....										
RECTUM	-	-	-	-	-	-	-	-	-	-
.....										
LUNGS	+	-	-	+	+	+	+	-	-	+
- Vascular Mineraliz.	1.	.	.	1.	1.	.	1.	.	.	1.
- Osseous Metaplasia	1.
.....										
THYMUS	+	+	+G	+G	+	+	+G	-	+G	-
- Epithelial Cyst	P.	P.	.	.	P.	P.	.	.	P.	.
- Hemorrhage	.	.	1.	1.	.	.	1.	.	1.	.
.....										
TESTES	-	-	-	-	-	-	-	-	-	-
.....										
EPIDIDYMIDES	-	-	-	-	-	-	-	-	-	-
.....										
MANDIBULAR GLANDS	-	-	-	-	-	-	-	-	-	-
.....										
SUBLINGUAL GLANDS	-	-	-	-	-	(-	-	-	-
.....										
PANCREAS	-	-	-	-	-	-	-	-	-	-
.....										
MANDIB.LYMPH NODES	(-	(+	(+	(-	(+
- Lymphoid Hyperplasia	.	(1.	(1.	(1.	.	(1.
.....										
THYROID GLAND	-	-	-	-	-	-	-	+	-	-
- Lymphoid C.Infiltr.	1.	.	.
.....										
PARATHYROID GLANDS	0	(-	(-	0	0	0	(-
.....										
ADRENAL CORTICES	-	+	+	+	+	+	-	+	+	-
- Fatty change	.	1.	1.	1.	2.	(1.	.	(1.
.....										

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 81/ 343
INDIVIDUAL ANIMAL DATA RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 01, 0 MG/KG/DAY

ANIMAL NUMBER :	1	2	3	4	5	6	7	8	9	10
	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO
ADRENAL MEDULLAS	-	-	-	-	-	-	-	-	-	-
SCIATIC NERVE, LEFT	-	-	-	-	-	-	-	-	-	-
SKIN/SUBCUTIS	-	-	-	-	+G	-	-	-	-	-
- Tail, bone atrophy	1.
MAMMARY GLAND	+	-	+	-	-	+	+	-	+	+
- Adipose tissue only	P.	.	P.	.	.	P.	P.	.	P.	P.
EYES	-	-	-	-	-	-	-	-	-	-
OPTIC NERVES	-	-	-	-	-	-	-	-	-	-
HARDERIAN GLANDS	-	-	-	+	+	+	-	+	+	+
- Porphyrin Deposits	.	.	.	1.	(1.	(1.	.	(1.	1.	1.
- Inflammation	(1.
CEREBRUM	-	-	-	-	-	-	-	-	-	-
CEREBELLUM	-	-	-	-	-	-	-	-	-	-
BRAIN STEM/MIDBRAIN	-	-	-	-	-	-	-	-	-	-
MEDULLA OBLONGATA	-	-	-	-	-	-	-	-	-	-
SKELETAL MUSCLE	-	-	-	-	-	-	-	-	-	-
PROSTATE GLAND	-	-	-	-	-	-	-	-	-	-
SEMINAL VESICLES	-	-	-	-	-	-	-	-	-	-
BONE MARROW, STERNUM	-	-	-	-	-	-	-	-	-	-
BONE, STERNUM	-	-	-	-	-	-	-	-	-	-
BONE, FEMUR	-	-	-	-	-	-	-	-	-	-
JOINT (HIP), LEFT	-	-	-	-	-	-	-	-	-	-

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	82/ 343
INDIVIDUAL ANIMAL DATA	RCC	:	A29553

TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 01, 0 MG/KG/DAY

ANIMAL NUMBER :	1	2	3	4	5	6	7	8	9	10
	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO
NASAL TURBINATES	-	-	-	-	-	-	-	-	-	-
SPINAL CORD, CERVIC.	-	-	-	-	-	-	-	-	-	-
SPINAL CORD, THORAC.	-	-	-	-	-	-	-	-	-	-
SPINAL CORD, LUMBAR	-	-	-	-	-	-	-	-	-	-
PITUITARY GLAND	-	-	+	+	-	-	-	-	-	-
- Cyst	.	.	P.	P.
BRONCHIAL LNN	-	-	-	-	-	-	-	-	-	-
PAROTID GLANDS	-	-	-	-	-	-	-	-	-	-
ZYMBAL'S GLANDS	0	-	0	0	-	-	-	-	-	-
LYMPH NODES	-	-	-	-	-	-	-	-	-	-

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 83/ 343
INDIVIDUAL ANIMAL DATA RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 01, 0 MG/KG/DAY

ANIMAL NUMBER :	11	12	13	14	15	16	17	18	19	20
	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO
HEART	-	-	-	-	-	-	-	-	-	-
.....										
AORTA	-	-	-	-	-	-	-	-	-	-
.....										
TRACHEA	+	+	-	+	-	+	+	-	-	-
- Glandular Ectasia	1.	1.	.	1.	.	1.	1.	.	.	.
.....										
ESOPHAGUS	-	-	-	-	-	-	-	-	-	-
.....										
LIVER	+	+	+	+	+	+	+	+	+	+
- Lymphoid C.Infiltr.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
- Hematopoiesis	1.	1.	.	1.	.
- Fatty change	1.	1.	1.	1.	1.	1.	.	1.	.	1.
.....										
SPLEEN	+	+	+	+	-	+	+	+	+	+
- Incr.Hemopoiesis	1.	1.	1.	1.	.	1.	1.	1.	1.	1.
.....										
MESENT. LYMPH NODE	+	-	+	+	+	+	-	-	-	+
- Lymphoid hyperplasia	1.	.	1.	1.	1.	1.	.	.	.	1.
.....										
KIDNEYS	+	+	+	+	+	+	+	+	+	+
- Hyaline Droplets	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
- Tubular Basophilia	.	(1.	.	.	1.	(1.
.....										
URINARY BLADDER	-	-	-	-	-	-	-	-	-	-
.....										
STOMACH	-	-	-	-	-	-	-	-	-	-
.....										
DUODENUM	-	-	-	-	-	-	-	-	-	-
.....										
JEJUNUM	-	-	-	-	-	-	-	-	-	-
.....										
PEYERS PATCHES JEJ.	-	+	+	+	+	+	-	-	+	+
- Lymphoid Hyperplasia	.	1.	1.	1.	1.	1.	.	.	2.	1.
.....										
ILEUM	-	-	-	-	-	-	-	-	-	-
.....										

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 84/ 343
INDIVIDUAL ANIMAL DATA RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 01, 0 MG/KG/DAY

ANIMAL NUMBER :	11	12	13	14	15	16	17	18	19	20
	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO
PEYERS PATCHES ILEUM	+	+	+	+	+	+	-	-	+	+
- Lymphoid Hyperplasia	1.	1.	1.	1.	1.	1.	.	.	2.	1.
- Mineralization	1.
COLON	-	-	-	-	-	-	-	-	-	-
CECUM	-	-	-	-	-	-	-	-	-	-
RECTUM	-	-	-	-	-	-	-	+	-	-
- Luminal dilation	2.	.	.
LUNGS	+	-	+	+	-	+	+	+	+	-
- Vascular Mineraliz.	1.	.	1.	1.	.	1.	1.	1.	1.	.
THYMUS	+G	+	-	+	-	+	-	+	-	+G
- Epithelial Cyst	P.	P.	.	.	.	P.	.	P.	.	.
- Hemorrhage	1.	1.
- Atrophy	.	.	.	1.
TESTES	-	-	-	-	+	-	-	+G	-	-
- Sertoli C.Vacuolat.	(1.
- Tubular Atrophy	(1.	.	.	4.	.	.
EPIDIDYMIDES	-	-	-	-	-	-	-	+G	-	-
- Cellular Debris	3.	.	.
- Fibrosis	2.	.	.
MANDIBULAR GLANDS	-	-	-	-	-	-	-	-	-	-
SUBLINGUAL GLANDS	-	-	-	-	-	-	-	-	-	-
PANCREAS	-	-	-	-	-	-	-	-	-	-
MANDIB. LYMPH NODES	(+	(-	(+	(-	(-	(+	(-	(-	(+	(-
- Lymphoid Hyperplasia	(1.	.	(2.	.	.	(1.	.	.	(2.	.
THYROID GLAND	-	-	-	-	-	-	-	-	-	-
PARATHYROID GLANDS	(-	(-	-	(-	-	(-	-	(-	(-	0

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 85/ 343
INDIVIDUAL ANIMAL DATA RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 01, 0 MG/KG/DAY

ANIMAL NUMBER :	11	12	13	14	15	16	17	18	19	20
	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO
ADRENAL CORTICES	+	+	+	+	+	+	+	-	-	+
- Fatty change	(1.	1.	1.	2.	1.	.	2.	.	.	3.
- Inflammation	1.
ADRENAL MEDULLAS	-	-	-	0	-	-	-	-	-	-
SCIATIC NERVE, LEFT	-	-	-	-	-	-	-	-	-	-
SKIN/SUBCUTIS	-	-	-	-	-	-	-	-	-	-
MAMMARY GLAND	+	+	+	-	+	+	+	-	+	+
- Adipose tissue only	P.	P.	P.	.	P.	P.	P.	.	P.	P.
EYES	-	-	-	-	-	-	-	-	-	-
OPTIC NERVES	-	-	-	-	-	-	-	-	-	-
HARDERIAN GLANDS	+	-	-	-	-	-	-	-	-	-
- Porphyrin Deposits	(1.
CEREBRUM	-	-	-	-	-	-	-	-	-	-
CEREBELLUM	-	-	-	-	-	-	-	-	-	-
BRAIN STEM/MIDBRAIN	-	-	-	-	-	-	-	-	-	-
MEDULLA OBLONGATA	-	-	-	-	-	-	-	-	-	-
SKELETAL MUSCLE	-	-	-	-	-	+	-	-	-	-
- Lymphoid C.Infiltr.	1.
PROSTATE GLAND	-G	-	-	-	-	-	-	-	-	-
SEMINAL VESICLES	-	-	-	-	-	-	-	-	-	-
BONE MARROW, STERNUM	-	-	-	-	-	-	-	-	-	-
BONE, STERNUM	-	-	-	-	-	-	-	-	-	-

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 86/ 343
INDIVIDUAL ANIMAL DATA RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 01, 0 MG/KG/DAY

ANIMAL NUMBER :	11	12	13	14	15	16	17	18	19	20
	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO
BONE, FEMUR	-	-	-	-	-	-	-	-	-	-
JOINT (HIP), LEFT	-	-	-	-	-	-	-	-	-	-
NASAL TURBINATES	-	-	-	-	-	-	-	-	-	-
SPINAL CORD, CERVIC.	-	-	-	-	-	-	-	-	-	-
SPINAL CORD, THORAC.	-	-	-	-	-	-	-	-	-	-
SPINAL CORD, LUMBAR	-	-	-	-	-	-	-	-	-	-
PITUITARY GLAND	-	-	-	-	-	-	-	-	+	-
- Cyst	P.	.
BRONCHIAL LNN	-	-	-	-	-	-	-	-	+	-
- Lymphoid Hyperplasia	1.	.
PAROTID GLANDS	-	-	-	-	-	-	-	-	-	-
ZYMBAL'S GLANDS	-	-	-	-	(-	-	-	-	-
LYMPH NODES	-	-	-	-	-	-	-	-	-	-

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

**PATHOLOGY REPORT
INDIVIDUAL ANIMAL DATA**

PAGE : 87/ 343
RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R
TEST SYSTEM : RAT, 13-Week, Oral
SPONSOR : DSM Nutritional Products AG
PATHOL. NO.: 11023 ROL
DATE : 14-FEB-07
PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 01, 0 MG/KG/DAY

ANIMAL NUMBER :

	21	22	23	24	25	26	27	28	29	30
	MR1	MR1	MR1	MR1	MR1	MR1	MR1	MR1	MR1	MR1
HEART	-	-	+	-	-	-	-	+	-	-
- lymphoid C.Infiltr.	.	.	1.	1.	.	.
AORTA	-	-	-	-	-	-	-	-	-	-
TRACHEA	-	-	-	-	-	-	+	+	-	-
- Glandular Ectasia	1.	1.	.	.
ESOPHAGUS	-	-	-	-	-	-	-	-	-	-
LIVER	+	+	+	+	+	+	+	+	+	+
- Lymphoid C.Infiltr.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
- Hematopoiesis	.	.	.	1.	1.	.	.	1.	.	.
- Fatty change	1.	1.	1.	1.	1.	.	1.	1.	1.	.
SPLEEN	+	+	+	+	+	+	+	+	-	-
- Incr.Hemopoiesis	1.	1.	1.	1.	1.	1.	1.	1.	.	.
MESENT. LYMPH NODE	+	+	+	+	+	+	-	+	+	+
- Lymphoid hyperplasia	1.	1.	1.	1.	1.	1.	.	1.	1.	1.
KIDNEYS	+	+	+	-	+G	+	+	+	-	+
- Hyaline Droplets	.	1.	1.	.	1.	1.	1.	1.	.	1.
- Tubular Basophilia	(1.	.	(1.
- Pelvic Dilation	1.
URINARY BLADDER	-	-	-	-	-	-	-	-	-	-
STOMACH	-	-	-	-	-	-	-	-	-	-
DUODENUM	-	-	-	-	-	-	-	-	-	-
JEJUNUM	-	-	-	-	-	-	-	-	-	-
PEYERS PATCHES JEJ.	+	+	+	+	+	+	-	-	+	+
- Lymphoid Hyperplasia	1.	1.	1.	1.	1.	1.	.	.	1.	1.
ILEUM	-	-	-	-	-	-	-	-	-	-

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 88/ 343
INDIVIDUAL ANIMAL DATA RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 01, 0 MG/KG/DAY

ANIMAL NUMBER :

	21	22	23	24	25	26	27	28	29	30
	MR1	MR1	MR1	MR1	MR1	MR1	MR1	MR1	MR1	MR1
PEYERS PATCHES ILEUM	+	+	+	+	+	+	+	+	+	+
- Lymphoid Hyperplasia	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
.....										
COLON	-	+	-	+	+	-	-	-	-	-
- Luminal dilation	.	1.	.	1.	1.
.....										
CECUM	-	-	-	-	-	-	-	-	-	-
.....										
RECTUM	-	+	-	-	+	-	-	-	-	-
- Luminal dilation	.	1.	.	.	1.
.....										
LUNGS	-	-	+	+	+	+	+	-	+	+
- Vascular Mineraliz.	.	.	1.	1.	1.	1.	1.	.	1.	1.
.....										
THYMUS	-	-	+	-	-	-	+	-	-	-
- Epithelial Cyst	.	.	P.	.	.	.	P.	.	.	.
.....										
TESTES	-	-	-	-	-	-	-	-	-	-
.....										
EPIDIDYMIDES	-	-	-	-	-	-	-	-	-	-
.....										
MANDIBULAR GLANDS	-	-	-	-	-	-	-	-	-	-
.....										
SUBLINGUAL GLANDS	-	-	-	-	-	-	-	-	-	-
.....										
PANCREAS	-	-	-	-	-	-	-	-	-	-
.....										
MANDIB. LYMPH NODES	(-	(-	(+	(-	(+	(+	(+	(+	(+	(+
- Lymphoid Hyperplasia	.	.	(1.	.	(1.	(1.	(1.	(1.	(1.	(1.
.....										
THYROID GLAND	-	-	-	-	(-	-	-	-	-	-
.....										
PARATHYROID GLANDS	(-	(-	-	0	0	(-	0	-	(-	(-
.....										
ADRENAL CORTICES	+	-	+	+	+	+	+	+	-	+
- Fatty change	1.	.	1.	1.	1.	1.	2.	(1.	.	1.
.....										
ADRENAL MEDULLAS	-	-	-	-	-	-	-	-	-	-
.....										

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 89/ 343
INDIVIDUAL ANIMAL DATA RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 01, 0 MG/KG/DAY

ANIMAL NUMBER :

	21	22	23	24	25	26	27	28	29	30
	MR1	MR1	MR1	MR1	MR1	MR1	MR1	MR1	MR1	MR1
SCIATIC NERVE, LEFT	-	+	-	-	-	-	-	+	-	-
- Nerve Fiber Degener.	.	1.	1.	.	.
SKIN/SUBCUTIS	-	-	-	-	-	-	-	-	-	-
MAMMARY GLAND	-	+	+	+	-	-	-	-	-	+
- Adipose tissue only	.	P.	P.	P.	P.
EYES	-	-	-	-	-	-	-	+G	-	-
- Lens degeneration	1.	.	.
OPTIC NERVES	(-	(-	-	-	-	-	-	(-	-	-
HARDERIAN GLANDS	+	-	+	+	-	+	-	-	+	+
- Porphyrin Deposits	(1.	.	(1.	(1.	.	(1.	.	.	(1.	1.
- Inflammation	(1.	.
CEREBRUM	-	-	-	-	-	-	-	-	-	-
CEREBELLUM	-	-	-	-	-	-	-	-	-	-
BRAIN STEM/MIDBRAIN	-	-	-	-	-	-	-	-	-	-
MEDULLA OBLONGATA	-	-	-	-	-	-	-	-	-	-
SKELETAL MUSCLE	-	-	-	-	-	-	-	-	-	-
PROSTATE GLAND	-	-	-	-	-	-	-	-	-	-
SEMINAL VESICLES	-	-	-	-	-	-	-	-	-	-
BONE MARROW, STERNUM	-	-	-	-	-	-	-	-	-	-
BONE, STERNUM	-	-	-	-	-	-	-	-	-	-
BONE, FEMUR	-	-	-	-	-	-	-	-	-	-
JOINT (HIP), LEFT	-	-	-	-	-	-	-	-	-	-

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	90/ 343
INDIVIDUAL ANIMAL DATA	RCC	:	A29553

<i>TEST ARTICLE</i>	: ULTRAZINE FG-R	<i>PATHOL. NO.:</i>	11023 ROL
<i>TEST SYSTEM</i>	: RAT, 13-Week, Oral	<i>DATE</i>	: 14-FEB-07
<i>SPONSOR</i>	: DSM Nutritional Products AG	<i>PathData®System</i>	V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 01, 0 MG/KG/DAY

ANIMAL NUMBER :	21	22	23	24	25	26	27	28	29	30
	MR1	MR1	MR1	MR1	MR1	MR1	MR1	MR1	MR1	MR1
NASAL TURBINATES	-	-	-	-	-	-	-	-	-	-
SPINAL CORD, CERVIC.	-	-	-	-	-	-	-	-	-	-
SPINAL CORD, THORAC.	-	-	-	-	-	-	-	-	-	-
SPINAL CORD, LUMBAR	-	-	-	-	-	-	-	-	-	-
PITUITARY GLAND	-	-	-	-	-	-	-	-	+	-
- Cyst	P.	.
BRONCHIAL LNN	-	-	-	-	-	-	-	-	-	-
PAROTID GLANDS	-	-	-	-	-	-	-	-	-	-
ZYMBAL'S GLANDS	-	-	-	-	-	-	-	-	-	-
LYMPH NODES	-	-	-	-	-	-	-	-	-	-

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 91/ 343
INDIVIDUAL ANIMAL DATA RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 01, 0 MG/KG/DAY

ANIMAL NUMBER :	125	126	127	128	129	130	131	132	133	134
	FKO	FKO	FKO	FKO	FKO	FKO	FKO	FKO	FKO	FKO
HEART	-	-	-	-	-	-	-	-	-	-
.....										
AORTA	-	-	-	-	-	-	-	-	-	-
.....										
TRACHEA	+	-	+	-	-	-	-	+	-	+
- Glandular Ectasia	1.	.	1.	1.	.	1.
.....										
ESOPHAGUS	-	-	-	-	-	-	-	-	-	-
.....										
LIVER	+	+	+	+	+	+	+	+	+	+
- Lymphoid C.Infiltr.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
- Hematopoiesis	1.	.	.	.	1.	1.
- Fatty change	1.	.	1.	.	1.
.....										
SPLEEN	+	+	+	-	+	+	-	+	+	+
- Incr.Hemopoiesis	1.	1.	1.	.	1.	1.	.	1.	1.	1.
.....										
MESENT. LYMPH NODE	-	-	+	-	+	+	+	-	+	+
- Lymphoid hyperplasia	.	.	1.	.	1.	1.	1.	.	1.	1.
.....										
KIDNEYS	-	-	-	-	+	-	+	-	-	-
- Mineralization	(1.	.	(1.	.	.	.
.....										
URINARY BLADDER	-	-	-	-	-	-	-	-	-	-
.....										
STOMACH	-	-	-	-	+G	-	-	-	-	-
- Congestion	P.
.....										
DUODENUM	-	-	-	-	-	-	-	-	-	-
.....										
JEJUNUM	-	-	-	-	-	-	-	-	-	-
.....										
PEYERS PATCHES JEJ.	+	+	+	+	+	-	-	+	+	+
- Lymphoid Hyperplasia	1.	1.	1.	1.	1.	.	.	1.	1.	1.
.....										
ILEUM	-	-	-	-	-	-	-	-	-	-
.....										

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 92/ 343
INDIVIDUAL ANIMAL DATA RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 01, 0 MG/KG/DAY

ANIMAL NUMBER :	125	126	127	128	129	130	131	132	133	134
	FKO	FKO	FKO	FKO	FKO	FKO	FKO	FKO	FKO	FKO
PEYERS PATCHES ILEUM	+	+	+	+	+	+	+	+	+	+
- Lymphoid Hyperplasia	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
- Mineralization	.	.	1.	1.	.	.
.....										
COLON	-	-	-	-	-	-	-	-	-	-
.....										
CECUM	-	-	-	-	-	-	-	-	-	-
.....										
RECTUM	-	+	-	-	-	-	-	-	-	-
- Luminal dilation	.	1.
.....										
LUNGS	-	-	-	-	-	-	+	-	-	-
- Vascular Mineraliz.	1.	.	.	.
.....										
THYMUS	+	+	-	-G	+G	+	+	+	+	+
- Epithelial Cyst	P.	P.	.	.	P.	P.	P.	P.	P.	P.
- Congestion	P.
- Atrophy	1.	.	.
.....										
OVARIES	-	-	-	+	+G	+	-	+	+G	-
- Stromal C.Hyperpl.	.	.	.	(1.	(1.	1.	.	(1.	(1.	.
- Congestion	P.	.	.	.	P.	.
.....										
MANDIBULAR GLANDS	-	-	-	-	-	-	-	-	-	-
.....										
SUBLINGUAL GLANDS	-	-	-	-	-	-	-	-	-	-
.....										
PANCREAS	-	-	-	-	-	-	-	-	-	-
.....										
MANDIB.LYMPH NODES	(-	(-	(-	(+	(+G	(+	(+	(+	(-	(+
- Lymphoid Hyperplasia	.	.	.	(1.	(1.	(1.	(1.	(1.	(1.	(1.
- Congestion	P.
.....										
THYROID GLAND	-	-	+	-	-	-	-	+	-	-
- Thymic Ectopia	.	.	(P.	(P.	.	.
.....										
PARATHYROID GLANDS	(-	(-	-	0	(-	0	0	-	0	-
.....										

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

**PATHOLOGY REPORT
INDIVIDUAL ANIMAL DATA**

PAGE : 93/ 343
RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R
TEST SYSTEM : RAT, 13-Week, Oral
SPONSOR : DSM Nutritional Products AG
PATHOL. NO.: 11023 ROL
DATE : 14-FEB-07
PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 01, 0 MG/KG/DAY

ANIMAL NUMBER :

	125	126	127	128	129	130	131	132	133	134
	FK0	FK0	FK0	FK0	FK0	FK0	FK0	FK0	FK0	FK0
ADRENAL CORTICES	-	-	-	-	+	-	-	-	-	+
- Fatty change	1.	1.
ADRENAL MEDULLAS	-	(-	-	-	-	-	-	-	-
SCIATIC NERVE, LEFT	-	-	-	-	+	-	-	-	+	-
- Nerve Fiber Degener.	1.	.	.	.	1.	.
SKIN/SUBCUTIS	-	-	-	-	-	-	-	-	-	-
MAMMARY GLAND	-	-	-	-	-	-	-	-	-	-
EYES	-	-	-	-	-	-	-	-	-	-
OPTIC NERVES	-	(-	(-	-	-	-	-	-
HARDERIAN GLANDS	+	+	+	-	-	-	-	-	+	+
- Porphyrin Deposits	1.	1.	(1.	1.
- Inflammation	(1.	.
CEREBRUM	-	-	-	-	-	-	-	-	-	-
CEREBELLUM	-	-	-	-	-	-	-	-	-	-
BRAIN STEM/MIDBRAIN	-	-	-	-	-	-	-	-	-	-
MEDULLA OBLONGATA	-	-	-	-	-	-	-	-	-	-
SKELETAL MUSCLE	-	-	-	-	-	-	-	-	-	-
UTERUS	+	+	+	+	+G	+	+	+	+	+
- Cycle:Metestrus	P.	P.	P.	P.	P.	.
- Cycle:Estrus	.	.	.	P.	.	P.	P.	.	.	P.
- Cycle:Proestrus	P.
- Congestion	P.
CERVIX	-	-	-	-	-	-	-	-	-	-
VAGINA	-	-	-	-	-	-	-	-	-	-

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 94/ 343
INDIVIDUAL ANIMAL DATA RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 01, 0 MG/KG/DAY

ANIMAL NUMBER :	125	126	127	128	129	130	131	132	133	134
	FK0	FK0	FK0	FK0	FK0	FK0	FK0	FK0	FK0	FK0
BONE MARROW, STERNUM	-	-	-	-	-	-	-	-	-	-
BONE, STERNUM	-	-	-	-	-	-	-	-	-	-
BONE, FEMUR	-	-	-	-	-	-	-	-	-	-
JOINT (HIP), LEFT	-	-	-	-	-	-	-	-	-	-
NASAL TURBINATES	-	-	-	-	-	-	-	-	-	-
SPINAL CORD, CERVIC.	-	-	-	-	-	-	-	-	-	-
SPINAL CORD, THORAC.	-	-	-	-	-	-	-	-	-	-
SPINAL CORD, LUMBAR	-	-	-	-	-	-	-	-	-	-
PITUITARY GLAND	-	-	-	-	-	-	-	-	-	-
BRONCHIAL LNN	-	-	-	-	-	-	+	-	-	-
- Lymphoid Hyperplasia	1.	.	.	.
PAROTID GLANDS	-	-	-	-	-	-	-	-	-	-
ZYMBAL'S GLANDS	-	-	-	(-	(-	-	(-
LYMPH NODES	-	-	-	-	-	-	-	-	-	-

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 95/ 343
INDIVIDUAL ANIMAL DATA RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 01, 0 MG/KG/DAY

ANIMAL NUMBER :	135	136	137	138	139	140	141	142	143	144
	FK0	FK0	FK0	FK0	FK0	FK0	FK0	FK0	FK0	FK0
HEART	-	-	-	-	-	-	-	-	-	-
AORTA	-	-	-	-	-	-	-	-	-	-
TRACHEA	+	+	-	-	-	+	-	+	-	-
- Glandular Ectasia	1.	1.	.	.	.	1.	.	1.	.	.
ESOPHAGUS	-	-	-	-	-	-	-	-	-	-
LIVER	+	+	+	+	+	+	+	+	+	+
- Lymphoid C.Infiltr.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
- Fatty change	.	1.	1.	1.	1.	1.
SPLEEN	+	+	-	+	+	+	+	-	+	+
- Incr.Hemopoiesis	1.	1.	.	1.	3.	1.	1.	.	1.	1.
MESENT. LYMPH NODE	-	-	+	+	-	+	-	-	-	-
- Lymphoid hyperplasia	.	.	1.	1.	.	1.
KIDNEYS	+	+	-	+	+	-	-	+	-	-
- Tubular Basophilia	(1.
- Mineralization	.	(1.	.	(1.	(1.	.	.	(1.	.	.
URINARY BLADDER	-	-	-	-	-	-	-	-	-	-
STOMACH	-	-	-	-	-	-	-	-	-	-
DUODENUM	-	-	-	-	-	-	+	-	-	-
- Inflammation	1.	.	.	.
JEJUNUM	-	-	-	-	-	-	-	-	-	-
PEYERS PATCHES JEJ.	+	+	+	+	+	+	+	+	-	-
- Lymphoid Hyperplasia	1.	1.	1.	1.	1.	1.	1.	1.	.	.
ILEUM	-	-	-	-	-	-	-	-	-	-

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 96/ 343
INDIVIDUAL ANIMAL DATA RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 01, 0 MG/KG/DAY

ANIMAL NUMBER :

	135	136	137	138	139	140	141	142	143	144
	FKO	FKO	FKO	FKO	FKO	FKO	FKO	FKO	FKO	FKO
PEYERS PATCHES ILEUM	-	+	+	+	+	+	+	+	-	-
- Lymphoid Hyperplasia	.	1.	1.	1.	1.	1.	1.	1.	.	.
- Mineralization	.	.	.	1.
COLON	-	+	-	-	-	-	-	-	-	-
- Luminal dilation	.	1.
CECUM	-	-	-	-	-	-	-	-	-	-
RECTUM	-	-	-	-	-	-	-	-	-	-
LUNGS	-	-	-	-	-	+	+	-	-	-
- Vascular Mineraliz.	1.	1.	.	.	.
THYMUS	+	-	+	+	+	+	+	+	+G	+
- Epithelial Cyst	P.	.	P.	P.	P.	P.	P.	P.	P.	P.
- Hemorrhage	1.	.
OVARIES	+	+	+	+	-	+	+	+G	-	+
- Stromal C.Hyperpl.	1.	1.	1.	1.	.	1.	1.	1.	.	1.
- Congestion	P.	.	.
MANDIBULAR GLANDS	-	-	-	-	-	-	-	-	-	-
SUBLINGUAL GLANDS	-	-	-	-	-	-	-	-	(-
PANCREAS	-	-	-	-	-	-	-	-	-	-
MANDIB.LYMPH NODES	(+	(+	(+	(+	(+	(-	(+	(+	(-	(+
- Lymphoid Hyperplasia	(1.	(1.	(1.	(1.	(1.	.	(1.	(1.	.	(1.
THYROID GLAND	-	-	-	-	-	-	-	+	-	-
- Thymic Ectopia	(P.	.	.
PARATHYROID GLANDS	0	0	0	(-	(-	(-	(-	(-	-	0
ADRENAL CORTICES	-	+	-	-	-	-	-	-	-	-
- Fatty change	.	(1.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 97/ 343
INDIVIDUAL ANIMAL DATA RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 01, 0 MG/KG/DAY

ANIMAL NUMBER :	135	136	137	138	139	140	141	142	143	144
	FK0	FK0	FK0	FK0	FK0	FK0	FK0	FK0	FK0	FK0
ADRENAL MEDULLAS	-	-	-	-	-	-	-	-	-	-
SCIATIC NERVE, LEFT	-	-	-	-	-	-	-	+	-	-
- Nerve Fiber Degener.	1.	.	.
SKIN/SUBCUTIS	-	-	-	-	-	-	-	-	-	-
MAMMARY GLAND	-	-	-	-	-	-	-	-	-	-
EYES	-	-	-	-	-	-	-	-	-	-
OPTIC NERVES	-	-	-	-	-	-	-	(-	(-	-
HARDERIAN GLANDS	+	+	-	-	+	-	-	-	-	-
- Porphyrin Deposits	(1.	(1.	.	.	1.
CEREBRUM	-	-	-	-	-	-	-	-	-	-
CEREBELLUM	-	-	-	-	-	-	-	-	-	-
BRAIN STEM/MIDBRAIN	-	-	-	-	-	-	-	-	-	-
MEDULLA OBLONGATA	-	-	-	-	-	-	-	-	-	-
SKELETAL MUSCLE	-	-	-	+	-	-	-	-	+	-
- Lymphoid C.Infiltr.	.	.	.	1.	1.	.
UTERUS	+	+	+	+	+	+	+	+	+	+
- Cycle:Metestrus	P.	.	.	.	P.
- Cycle:Estrus	P.	.	.	P.	.	.	P.	.	P.	.
- Cycle:Diestrus	.	P.	P.	.	P.	.	.	P.	.	.
CERVIX	-	-	-	-	-	-	-	-	-	-
VAGINA	-	-	-	-	-	-	-	-	-	-
BONE MARROW, STERNUM	-	-	-	-	-	-	-	-	-	-
BONE, STERNUM	-	-	-	-	-	-	-	-	-	-

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	98/ 343
INDIVIDUAL ANIMAL DATA	RCC	:	A29553

TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 01, 0 MG/KG/DAY

ANIMAL NUMBER :	135	136	137	138	139	140	141	142	143	144
	FK0	FK0	FK0	FK0	FK0	FK0	FK0	FK0	FK0	FK0
BONE, FEMUR	-	-	-	-	-	-	-	-	-	-
JOINT (HIP), LEFT	-	-	-	-	-	-	-	-	-	-
NASAL TURBINATES	-	-	-	-	-	-	-	-	-	-
SPINAL CORD, CERVIC.	-	-	-	-	-	-	-	-	-	-
SPINAL CORD, THORAC.	-	-	-	-	-	-	-	-	-	-
SPINAL CORD, LUMBAR	-	-	-	-	-	-	-	-	-	-
PITUITARY GLAND	-	-	-	-	-	-	-	-	-	-
BRONCHIAL LNN	-	-	-	-	-	-	-	-	-	-
PAROTID GLANDS	+	-	-	(-	-	-	-	-	-
- Inflammation	(1.
ZYMBAL'S GLANDS	-	-	0	(-	-	-	-	-	-
LYMPH NODES	-	-	-	-	-	-	-	-	-	-

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 99/ 343
INDIVIDUAL ANIMAL DATA RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 01, 0 MG/KG/DAY

ANIMAL NUMBER :	145	146	147	148	149	150	151	152	153	154
	FR1	FR1	FR1	FR1	FR1	FR1	FR1	FR1	FR1	FR1
HEART	-	-	-	-	-	-	-	-	-	-
AORTA	-	-	-	-	-	-	-	-	-	-
TRACHEA	-	-	+	-	-	+	+	-	-	+
- Glandular Ectasia	.	.	1.	.	.	1.	1.	.	.	1.
ESOPHAGUS	-	-	-	-	-	-	-	-	-	-
LIVER	+	+	+	+	+	+	+	+	+	+
- Lymphoid C.Infiltr.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
- Hematopoiesis	.	.	1.	.	1.	.	1.	1.	1.	.
- Fatty change	.	1.	1.	1.	1.	.	1.	1.	1.	1.
SPLEEN	+	+	+	+	+	+	+	+	+	+
- Incr.Hemopoiesis	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
MESENT. LYMPH NODE	+	+	+	+	+	+	+	+	+	+
- Lymphoid hyperplasia	1.	1.	2.	1.	1.	1.	1.	1.	1.	1.
- Focal sinus.ectasia	1.	.
KIDNEYS	-	-	-	+	-	-	-	+	-	+
- Mineralization	.	.	.	1.	.	.	.	(1.	.	1.
URINARY BLADDER	-	-	-	-	-	-	-	-	-	-
STOMACH	-	-	-	-	-	-	-	+	-	-
- Glandular dilation	1.	.	.
DUODENUM	-	-	-	-	-	-	-	-	-	-
JEJUNUM	-	-	-	-	-	-	-	-	-	-
PEYERS PATCHES JEJ.	-	+	-	+	-	+	+	+	+	+
- Lymphoid Hyperplasia	.	1.	.	1.	.	1.	1.	1.	1.	1.
ILEUM	-	-	-	-	-	-	-	-	-	-

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 100/ 343
INDIVIDUAL ANIMAL DATA RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 01, 0 MG/KG/DAY

ANIMAL NUMBER :	145	146	147	148	149	150	151	152	153	154
	FR1	FR1	FR1	FR1	FR1	FR1	FR1	FR1	FR1	FR1
PEYERS PATCHES ILEUM	-	+	+	+	+	+	+	+	+	+
- Lymphoid Hyperplasia	.	1.	1.	1.	1.	1.	1.	1.	1.	1.
.....										
COLON	-	-	+	-	-	-	-	-	-	-
- Luminal dilation	.	.	1.
.....										
CECUM	-	-	-	-	-	-	-	-	-	-
.....										
RECTUM	-	-	-	-	-	-	-	-	-	-
.....										
LUNGS	-	-	-	+	-	-	-	+	+	+
- Vascular Mineraliz.	.	.	.	1.	.	.	.	1.	1.	1.
.....										
THYMUS	+	+	+	+	+	+	-	+	+	+
- Epithelial Cyst	P.	P.	P.	P.	P.	P.	.	P.	P.	P.
.....										
OVARIES	+	+	-	-	-	+	-	-	-	+
- Stromal C.Hyperpl.	1.	1.	.	.	.	1.	.	.	.	1.
.....										
MANDIBULAR GLANDS	(-	-	-	-	-	-	-	-	-
.....										
SUBLINGUAL GLANDS	(-	-	-	(-	-	(-	-
.....										
PANCREAS	-	-	-	-	-	-	-	-	-	-
.....										
MANDIB.LYMPH NODES	(-	(-	(+	(+	(+
- Lymphoid Hyperplasia	.	.	.	(1.	(1.	(1.	(
.....										
THYROID GLAND	-	-	-	-	-	-	-	-	-	+
- Thymic Ectopia	(
.....										
PARATHYROID GLANDS	(-	-	-	(-	-	(-	0
.....										
ADRENAL CORTICES	-	-	+	-	-	-	+	-	-	+
- Fatty change	.	.	(1.	.	.	(1.	.	(
.....										
ADRENAL MEDULLAS	-	-	-	-	-	-	-	-	-	-
.....										

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	: 101/ 343
INDIVIDUAL ANIMAL DATA	RCC	: A29553

TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 01, 0 MG/KG/DAY

ANIMAL NUMBER :	145	146	147	148	149	150	151	152	153	154
	FR1	FR1	FR1	FR1	FR1	FR1	FR1	FR1	FR1	FR1
SCIATIC NERVE, LEFT	-	-	-	-	-	-	-	-	+	-
- Nerve Fiber Degener.	1.	.
SKIN/SUBCUTIS	-	-	-	-	-	-	-	-	-	-
MAMMARY GLAND	-	-	-	-	-	-	-	-	-	-
EYES	-	-	-	(-	-	-	-	-	-
OPTIC NERVES	-	-	-	(-	-	-	-	-	-
HARDERIAN GLANDS	-	+	+	+	+	-	+	-	+	+
- Porphyrin Deposits	.	1.	.	(1.	.	1.	.	(1.
- Inflammation	.	.	(1.	.	1.
CEREBRUM	-	-	-	-	-	-	-	-	-	-
CEREBELLUM	-	-	-	-	-	-	-	-	-	-
BRAIN STEM/MIDBRAIN	-	-	-	-	-	-	-	-	-	-
MEDULLA OBLONGATA	-	-	-	-	-	-	-	-	-	-
SKELETAL MUSCLE	-	-	-	-	-	-	-	-	-	-
UTERUS	+	+	+	+	+	+	+	+	+	+
- Cycle:Metestrus	.	.	.	P.	P.	.	.	P.	P.	.
- Cycle:Proestrus	.	P.	P.	.	.	.	P.	.	.	P.
- Cycle:Diestrus	P.	P.
CERVIX	-	-	-	-	-	-	-	-	-	-
VAGINA	-	-	-	-	-	-	-	-	-	-
BONE MARROW, STERNUM	-	-	-	-	-	-	-	-	-	-
BONE, STERNUM	-	-	-	-	-	-	-	-	-	-
BONE, FEMUR	-	-	-	-	-	-	-	-	-	-

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	102/ 343
INDIVIDUAL ANIMAL DATA	RCC	:	A29553

TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 01, 0 MG/KG/DAY

ANIMAL NUMBER :	145	146	147	148	149	150	151	152	153	154
	FR1	FR1	FR1	FR1	FR1	FR1	FR1	FR1	FR1	FR1
JOINT (HIP), LEFT	-	-	-	-	-	-	-	-	-	-
NASAL TURBINATES	-	-	-	-	-	-	-	-	-	-
SPINAL CORD, CERVIC.	-	-	-	-	-	-	-	-	-	-
SPINAL CORD, THORAC.	-	-	-	-	-	-	-	-	-	-
SPINAL CORD, LUMBAR	-	-	-	-	-	-	-	-	-	-
PITUITARY GLAND	+	-	-	-	-	-	-	-	-	-
- Cyst	P.
BRONCHIAL LNN	-	-	-	-	-	-	-	-	-	-
PAROTID GLANDS	-	-	+	-	-	-	-	-	-	-
- Inflammation	.	.	(1.
ZYMBAL'S GLANDS	-	-	-	-	-	-	-	-	-	-
LYMPH NODES	-	-	-	-	-	-	-	-	-	-

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 103/ 343
INDIVIDUAL ANIMAL DATA RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 02, 500 MG/KG/DAY

ANIMAL NUMBER :	37	38	39	40	41	42	43	44	45	46
	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO+	MKO	MKO
HEART								+		
- lymphoid C.Infiltr.								3.		
- Fibrosis								1.		
AORTA								-		
TRACHEA								-		
ESOPHAGUS								-		
LIVER								-		
SPLEEN								+		
- Lymphoid Depletion								2.		
- Fibrosis, red pulp								2.		
MESENT. LYMPH NODE	+	+	+	+	+	+	+	+	+	+
- Lymphoid hyperplasia	1.	1.	1.	1.	1.	2.	1.	1.	1.	1.
- Foamy histiocytes	1.
KIDNEYS	-	+	-G	+	+G	+	+	+G	+	+G
- Polycystic Kidney	4.	.	.
- Hyaline Droplets	.	1.	.	1.	1.	1.	1.	.	1.	1.
- Tubular Basophilia	.	(1.
- Pelvic Dilation	(1.	.	.	2.	.	(1.
- Lymphoid infiltr.	.	.	.	(1.
URINARY BLADDER								-		
STOMACH								+	+G	
- Forestomach Erosion								4.	.	
- Submucosal edema								4.	.	
- Congestion								.	P.	
DUODENUM								-G		
JEJUNUM								-G		

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	104/ 343
INDIVIDUAL ANIMAL DATA	RCC	:	A29553

TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 02, 500 MG/KG/DAY

ANIMAL NUMBER :	37	38	39	40	41	42	43	44	45	46
	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO+	MKO	MKO
PEYERS PATCHES JEJ.								+		
- Lymphoid depletion								3.		
.....										
ILEUM								+G		
- Intussusception								P.		
.....										
PEYERS PATCHES ILEUM								+		
- Lymphoid depletion								1.		
.....										
COLON								-		
.....										
CECUM								-		
.....										
RECTUM						+		-		+
- Luminal dilation						4.				3.
.....										
LUNGS								+		
- Osseous Metaplasia								1.		
- Subpl.Lymphoid Inf.								1.		
.....										
THYMUS				+G		+G		+		
- Epithelial Cyst				P.		P.		.		
- Hemorrhage				1.		1.		.		
- Atrophy				.		.		3.		
.....										
TESTES								+		
- Sertoli C.Vacuolat.								1.		
- Tubular Atrophy								1.		
.....										
EPIDIDYMIDES								+		
- Cellular Debris								2.		
- Oligospermia								3.		
.....										
MANDIBULAR GLANDS								-		
.....										
SUBLINGUAL GLANDS								+		
- Apoptosis								2.		
.....										
PANCREAS								-G		
.....										

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 105/ 343
INDIVIDUAL ANIMAL DATA RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 02, 500 MG/KG/DAY

ANIMAL NUMBER :

	37	38	39	40	41	42	43	44	45	46
	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO+	MKO	MKO
MANDIB.LYMPH NODES								(-		
THYROID GLAND								-		
PARATHYROID GLANDS								+		
- Diffuse Hyperplasia								3.		
ADRENAL CORTICES								+		
- Diffuse Hypertrophy								1.		
ADRENAL MEDULLAS								-		
SCIATIC NERVE, LEFT								+		
- Nerve Fiber Degener.								1.		
SKIN/SUBCUTIS								-		
MAMMARY GLAND								-		
EYES								+		
- Retinal rosette								2.		
OPTIC NERVES								-		
HARDERIAN GLANDS								-		
CEREBRUM								-		
CEREBELLUM								-		
BRAIN STEM/MIDBRAIN								-		
MEDULLA OBLONGATA								-		
SKELETAL MUSCLE								-		
PROSTATE GLAND								-		

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	106/ 343
INDIVIDUAL ANIMAL DATA	RCC	:	A29553

TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 02, 500 MG/KG/DAY

ANIMAL NUMBER :	37	38	39	40	41	42	43	44	45	46
	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO+	MKO	MKO
SEMINAL VESICLES								+		+G
- Congestion								.		P.
- Apoptosis								2.		.
BONE MARROW, STERNUM								+		
- Fatty replacement								3.		
BONE, STERNUM								-		
BONE, FEMUR								+		
- Osteodyst. fibrosa								2.		
- Bone marrow, hypocel								3.		
JOINT (HIP), LEFT								-		
NASAL TURBINATES								-		
SPINAL CORD, CERVIC.								-		
SPINAL CORD, THORAC.								-		
SPINAL CORD, LUMBAR								-		
PITUITARY GLAND								-		
BRONCHIAL LNN								+		
- Lymphoid depletion								1.		
PAROTID GLANDS								+		
- Ductular Ectasia								2.		
- Atrophy								2.		
ZYMBAL'S GLANDS								-		
LYMPH NODES								+G		
- Cowper's glands								P.		

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	107/ 343
INDIVIDUAL ANIMAL DATA	RCC	:	A29553

TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 02, 500 MG/KG/DAY

ANIMAL NUMBER :	47	48	49	50	51	52	53	54	55	56
	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO
MESENT. LYMPH NODE	+	+	+	+	+	+	+	+	+	+
- Lymphoid hyperplasia	2.	2.	1.	1.	1.	1.	2.	1.	1.	2.
- Foamy histiocytes	.	1.	.	1.	1.	.
.....										
KIDNEYS	+	+	+	+	+	+	+	+	+	+
- Hyaline Droplets	1.	1.	1.	.	1.	1.	1.	.	1.	.
- Tubular Basophilia	.	.	.	(1.	.	.	(1.	(1.	(1.	.
- Lymphoid infiltr.	(1.
.....										
RECTUM	-	-	-	-	-	-	-	-	-	-
.....										
THYMUS	'	'	+G	+G	'	+G	'	'	'	'
- Epithelial Cyst			.	.		P.				
- Hemorrhage			.	.		1.				
- Congestion			P.	P.		.				
.....										
SKIN/SUBCUTIS	'	'	'	'	'	'	'	+G	'	'
- Tail, bone atrophy								1.		
.....										

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 108/ 343
INDIVIDUAL ANIMAL DATA RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 02, 500 MG/KG/DAY

ANIMAL NUMBER :	161	162	163	164	165	166	167	168	169	170
	FKO	FKO	FKO	FKO	FKO	FKO	FKO	FKO	FKO	FKO
MESENT. LYMPH NODE	+	+	+	+	+	+	+	+	+	+
- Lymphoid hyperplasia	1.	1.	2.	1.	2.	1.	1.	1.	1.	1.
- Foamy histiocytes	1.	.	1.
KIDNEYS	+G	+G	-	+	+	+	-	-	+	+
- Pelvic Dilation	(1.	(1.
- Mineralization	.	.	.	1.	(1.	1.	.	.	(1.	(1.
- Transit.C.Hyperpl.	.	(1.
RECTUM	-	-	-	-	-	-	-	-	-	+
- Luminal dilation	2.
THYMUS	+G
- Epithelial Cyst	P.
- Hemorrhage	1.
UTERUS	+G	.
- Congestion	P.	.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 109/ 343
INDIVIDUAL ANIMAL DATA RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 02, 500 MG/KG/DAY

ANIMAL NUMBER :	171	172	173	174	175	176	177	178	179	180
	FKO	FKO	FKO	FKO	FKO	FKO	FKO	FKO	FKO	FKO
MESENT. LYMPH NODE	+	+	+	+	+	+	+	+	+	+
- Lymphoid hyperplasia	1.	1.	1.	1.	1.	2.	1.	1.	1.	1.
- Foamy histiocytes	.	.	1.
KIDNEYS	-	-	+	-	-	-	-	+	-	+
- Mineralization	.	.	(1.	(1.	.	(1.
- Transit.C.Hyperpl.	.	.	(1.
RECTUM	+	-	+	-	-	-	+	-	-	-
- Luminal dilation	3.	.	1.	.	.	.	2.	.	.	.
THYMUS	+G	+G	+G	'	'	'	'	+G	+G	'
- Epithelial Cyst	P.	.	P.					P.	P.	
- Hemorrhage	1.	2.	1.					1.	1.	
- Atrophy	1.	.	.					1.	1.	
OVARIES	'	'	'	'	'	'	'	+G	'	'
- Congestion								P.		
MAMMARY GLAND	'	+G	'	'	'	'	'	'	'	'
- Adenocarcinoma		NO.								

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 110/ 343
INDIVIDUAL ANIMAL DATA RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 03, 1000 MG/KG/DAY

ANIMAL NUMBER :	63	64	65	66	67	68	69	70	71	72
	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO
MESENT. LYMPH NODE	+	+	+	+	+	+	+	+	+	+
- Lymphoid hyperplasia	2.	2.	1.	1.	1.	1.	1.	1.	1.	1.
- Foamy histiocytes	1.	2.	1.	1.	1.	2.	1.	.	2.	1.
KIDNEYS	-	-	+	+	+	+	+	+G	+G	-
- Hyaline Droplets	.	.	1.	1.	1.	1.
- Tubular Basophilia	(1.	.	.	.
- Pelvic Dilation	(1.	(1.	.
- Lymphoid infiltr.	(1.	.	.	.
RECTUM	-	-	-	-	-	-	-	-	-	-
LUNGS	.	.	.	+G
- Vascular Mineraliz.	.	.	.	1.
- Osseous Metaplasia	.	.	.	1.
THYMUS	.	.	+G	.	+G	.	+G	.	.	.
- Epithelial Cyst	.	.	P.	.	.	.	P.	.	.	.
- Hemorrhage	.	.	1.	.	1.	.	1.	.	.	.
TESTES	+G	.
- Tubular Atrophy	4.	.
LYMPH NODES	+G
- Hemorrhage	2.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	: 111/ 343
INDIVIDUAL ANIMAL DATA	RCC	: A29553

<i>TEST ARTICLE</i>	: ULTRAZINE FG-R	<i>PATHOL. NO.:</i>	11023 ROL
<i>TEST SYSTEM</i>	: RAT, 13-Week, Oral	<i>DATE</i>	: 14-FEB-07
<i>SPONSOR</i>	: DSM Nutritional Products AG	<i>PathData®System</i>	V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 03, 1000 MG/KG/DAY

ANIMAL NUMBER :	73	74	75	76	77	78	79	80	81	82
	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO
MESENT. LYMPH NODE	+	+	+	+	+	+	+	+	+	+
- Lymphoid hyperplasia	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
- Foamy histiocytes	2.	1.	1.	.	.	1.	2.	1.	1.	1.
.....										
KIDNEYS	-	+	+	+	+	-	+G	+G	+	+
- Tubul.Cystic Dilat.	.	(1.
- Hyaline Droplets	.	1.	1.	1.	1.	.	1.	1.	1.	1.
- Tubular Basophilia	(2.	.	.	.	(1.	(1.
- Pelvic Dilation	(1.	(1.	.	.
.....										
RECTUM	-	-	-	-	-	-	-	-	-	-
.....										

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 112/ 343
INDIVIDUAL ANIMAL DATA RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 03, 1000 MG/KG/DAY

ANIMAL NUMBER :	187	188	189	190	191	192	193	194	195	196
	FKO	FKO	FKO	FKO	FKO	FKO	FKO	FKO	FKO	FKO
MESENT. LYMPH NODE	+	+	+	+	+	+	+	+	+	+
- Lymphoid hyperplasia	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
- Foamy histiocytes	.	.	1.	.	.	1.	.	1.	.	1.
KIDNEYS	+	+	-	+	+	-	+	+	+	+
- Mineralization	(1.	.	.	(1.	(1.	.	(1.	(1.	.	1.
- Transit.C.Hyperpl.	(1.
- Tubular vacuolation	1.	1.	1.	1.	.
- Lymphoid infiltr.	.	.	.	(1.
RECTUM	-	-	-	-	+	-	-	-	-	-
- Luminal dilation	1.
THYMUS		+G								
- Epithelial Cyst		P.								
- Hemorrhage		1.								
PANCREAS				+G						
- Congestion				P.						
SKIN/SUBCUTIS			+G							
- Tail, bone atrophy			1.							

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	113/ 343
INDIVIDUAL ANIMAL DATA	RCC	:	A29553

<i>TEST ARTICLE</i>	: ULTRAZINE FG-R	<i>PATHOL. NO.:</i>	11023 ROL
<i>TEST SYSTEM</i>	: RAT, 13-Week, Oral	<i>DATE</i>	: 14-FEB-07
<i>SPONSOR</i>	: DSM Nutritional Products AG	<i>PathData®System</i>	V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 03, 1000 MG/KG/DAY

ANIMAL NUMBER :	197	198	199	200	201	202	203	204	205	206
	FKO	FKO	FKO	FKO	FKO	FKO	FKO	FKO	FKO	FKO
MESENT. LYMPH NODE	+	+	+	+	+	+	+	+	+	+
- Lymphoid hyperplasia	1.	1.	2.	1.	1.	1.	2.	1.	1.	1.
- Foamy histiocytes	.	2.	1.	2.	.	1.
.....										
KIDNEYS	+	+	+G	-	-	-	-	+	+	-
- Pelvic Dilation	.	.	(1.
- Mineralization	1.	(1.	(1.	1.	1.	.
- Tubular vacuolation	.	1.
.....										
RECTUM	-	-	-	-	-	+	-	-	-	-
- Luminal dilation	1.
.....										
UTERUS	!	!	!	!	!	!	!	!	+G	!
- Congestion									P.	
.....										

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 114/ 343
INDIVIDUAL ANIMAL DATA RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 04, 2000 MG/KG/DAY

ANIMAL NUMBER :	89	90	91	92	93	94	95	96	97	98
	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO
HEART	-	-	-	-	-	-	-	-	-	-
AORTA	-	-	-	-	-	-	-	-	-	-
TRACHEA	-	-	+	-	-	+	-	-	-	+
- Glandular Ectasia	.	.	1.	.	.	1.	.	.	.	2.
ESOPHAGUS	-	-	-	-	-	-	-	-	-	-
LIVER	+	+	+	+	+	+	+	+	+	+
- Lymphoid C.Infiltr.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
- Fatty change	.	.	1.	1.	1.	1.	1.	.	1.	1.
SPLEEN	+	+	-	+	+	+	+	+	+	+
- Incr.Hemopoiesis	1.	1.	.	2.	1.	1.	1.	1.	1.	1.
MESENT. LYMPH NODE	+	+	+	+	+	+	+	+	+	+
- Lymphoid hyperplasia	1.	.	1.	1.	.	.	1.	1.	.	.
- Foamy histiocytes	2.	3.	2.	3.	3.	3.	2.	2.	1.	2.
KIDNEYS	-	+	-	+	+	+G	-	+	-	+
- Hyaline Droplets	.	1.	.	1.	1.	1.	.	.	.	1.
- Tubular Basophilia	(1.	.	.	.
- Pelvic Dilation	2.
- Tubular vacuolation	.	1.
URINARY BLADDER	-	-	-	-	-	-	-	-	-	-
STOMACH	-	-	-	-	+	-	-	-	-	-
- Glandular dilation	1.
DUODENUM	-	-	-	-	-	-	-	-	-	-
JEJUNUM	-	-	-	-	-	-	-	-	-	-
PEYERS PATCHES JEJ.	+	+	+	+	-	+	+	+	+	+
- Lymphoid Hyperplasia	1.	1.	1.	1.	.	1.	1.	1.	1.	1.
ILEUM	-	-	-	-	-	-	-	-	-	-

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 115/ 343
INDIVIDUAL ANIMAL DATA RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 04, 2000 MG/KG/DAY

ANIMAL NUMBER :	89	90	91	92	93	94	95	96	97	98
	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO
PEYERS PATCHES ILEUM	+	+	+	+	+	+	+	+	+	+
- Lymphoid Hyperplasia	1.	1.	2.	1.	1.	1.	1.	1.	1.	1.
.....										
COLON	-	+	-	-	-	-	+	+	-	-
- Luminal dilation	.	1.	1.	1.	.	.
.....										
CECUM	-	-	-	-	-	-	-	-	-	-
.....										
RECTUM	-	-	-	-	-	+	-	-	-	-
- Luminal dilation	1.
.....										
LUNGS	-	+	-	+	+	+	+	-	+	-
- Vascular Mineraliz.	.	1.	.	1.	1.	1.	1.	.	1.	.
.....										
THYMUS	-	+	+	-	+G	+G	+G	-	-	-
- Epithelial Cyst	.	P.	P.	.	.	P.
- Hemorrhage	1.	1.
- Congestion	P.	.	.	.
.....										
TESTES	-	-	-	-	-	-	-	-	-	-
.....										
EPIDIDYMIDES	-	-	-	-	-	-	-	-	-	-
.....										
MANDIBULAR GLANDS	-	-	-	-	-	-	-	-	-	-
.....										
SUBLINGUAL GLANDS	(-	-	-	-	-	-	-	-	-	-
.....										
PANCREAS	-	-	-	-	-	-	-	-	-	-
.....										
MANDIB.LYMPH NODES	(-	(+	(+	(-	(+	(+	(+	(+	(+	(+
- Lymphoid Hyperplasia	.	(1.	(1.	.	(1.	(1.	(1.	(1.	(1.	(1.
.....										
THYROID GLAND	-	-	-	-	-	-	-	-	-	-
.....										
PARATHYROID GLANDS	0	-	(-	(-	(-	(-	0	0	(-	-
.....										
ADRENAL CORTICES	-	+	-	+	-	-	+	-	+	-
- Fatty change	.	1.	.	1.	.	.	(1.	.	1.	.
.....										

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	: 116/ 343
INDIVIDUAL ANIMAL DATA	RCC	: A29553

TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 04, 2000 MG/KG/DAY

ANIMAL NUMBER :	89	90	91	92	93	94	95	96	97	98
	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO
ADRENAL MEDULLAS	-	-	-	-	-	-	-	-	-	-
SCIATIC NERVE, LEFT	-	-	-	-	-	-	-	-	-	-
SKIN/SUBCUTIS	-	-	-	-	-	-	-	-	-	-
MAMMARY GLAND	-	-	-	-	-	-	-	+	-	-
- Adipose tissue only	P.	.	.
EYES	-	-	-	-	-	-	-	-	-	-
OPTIC NERVES	-	-	-	-	(-	-	-	-	-
HARDERIAN GLANDS	-	-	+	-	-	+	+	-	-	-
- Porphyrin Deposits	.	.	1.	.	.	(1.	(1.	.
CEREBRUM	-	-	-	-	-	-	-	-	-	-
CEREBELLUM	-	-	-	-	-	-	-	-	-	-
BRAIN STEM/MIDBRAIN	-	-	-	-	-	-	-	-	-	-
MEDULLA OBLONGATA	-	-	-	-	-	-	-	-	-	-
SKELETAL MUSCLE	-	-	-	-	-	-	-	-	-	-
PROSTATE GLAND	-	-	-	-	-	-	-	-	-	-
SEMINAL VESICLES	-	-	-	-	-	-	-	-	-	-
BONE MARROW, STERNUM	-	-	-	-	-	-	-	-	-	-
BONE, STERNUM	-	-	-	-	-	-	-	-	-	-
BONE, FEMUR	-	-	-	-	-	-	-	-	-	-
JOINT (HIP), LEFT	-	-	-	-	-	-	-	-	-	-
NASAL TURBINATES	-	-	-	-	-	-	-	-	-	-

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	117/ 343
INDIVIDUAL ANIMAL DATA	RCC	:	A29553

TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 04, 2000 MG/KG/DAY

ANIMAL NUMBER :	89	90	91	92	93	94	95	96	97	98
	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO
SPINAL CORD, CERVIC.	-	-	-	-	-	-	-	-	-	-
SPINAL CORD, THORAC.	-	-	-	-	-	-	-	-	-	-
SPINAL CORD, LUMBAR	-	-	-	-	-	-	-	-	-	-
PITUITARY GLAND	-	-	-	+	+	-	-	-	-	-
- Cyst	.	.	.	P.	P.
BRONCHIAL LNN	-	-	+	-	-	-	-	+	-	+G
- Lymphoid Hyperplasia	.	.	1.	1.	.	.
- Hemorrhage	1.
PAROTID GLANDS	-	-	-	-	-	-	-	-	-	-
ZYMBAL'S GLANDS	-	0	0	0	-	-	0	-	-	-
LYMPH NODES	-	-	-	-	-	-	-	-	-	-

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

**PATHOLOGY REPORT
INDIVIDUAL ANIMAL DATA**

PAGE : 118/ 343
RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R
TEST SYSTEM : RAT, 13-Week, Oral
SPONSOR : DSM Nutritional Products AG
PATHOL. NO.: 11023 ROL
DATE : 14-FEB-07
PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 04, 2000 MG/KG/DAY

ANIMAL NUMBER :

	99 MKO	100 MKO	101 MKO	102 MKO	103 MKO	104 MKO	105 MKO	106 MKO	107 MKO	108 MKO
HEART	-	-	-	-	-	-	-	-	-	-
AORTA	-	-	-	-	-	-	-	-	-	-
TRACHEA	+	-	+	-	-	-	-	-	-	+
- Glandular Ectasia	1.	.	1.	1.
ESOPHAGUS	-	-	-	-	-	-	-	-	-	-
LIVER	+	+	+	+	+	+	+	+	+	+
- Lymphoid C.Infiltr.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
- Hematopoiesis	1.
- Fatty change	1.	1.	1.	1.	1.	1.	1.	.	2.	.
SPLEEN	+	+	+	+	+	+	+	+	-	+
- Incr.Hemopoiesis	1.	1.	1.	1.	1.	1.	1.	1.	.	1.
MESENT. LYMPH NODE	+	+	+	+	+	+	+	+	+	+
- Lymphoid hyperplasia	.	.	1.	.	1.	1.	1.	1.	1.	2.
- Foamy histiocytes	3.	2.	2.	2.	1.	3.	2.	2.	2.	3.
KIDNEYS	+	+	+	+G	+	+G	-	-	-	-
- Hyaline Droplets	.	1.	1.	.	1.
- Tubular Basophilia	.	(1.	(1.	.	.	(1.
- Pelvic Dilation	.	.	.	1.	.	1.
- Tubular vacuolation	1.	.	.	1.
URINARY BLADDER	-	-	-	-	-	-	-	-	-	-
STOMACH	-	-	-	-	-	+	-	-	-	-
- Squamous Cyst	1.
DUODENUM	-	-	-	-	-	-	-	-	-	-
JEJUNUM	-	-	-	-	-	-	-	-	-	-
PEYERS PATCHES JEJ.	+	+	+	+	+	+	+	+	+	-
- Lymphoid Hyperplasia	1.	1.	1.	1.	1.	1.	1.	1.	1.	.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 119/ 343
INDIVIDUAL ANIMAL DATA RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 04, 2000 MG/KG/DAY

ANIMAL NUMBER :	99	100	101	102	103	104	105	106	107	108
	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO
ILEUM	-	-	-	-	-	-	-	-	-	-
PEYERS PATCHES ILEUM	+	+	+	+	+	+	+	+	+	+
- Lymphoid Hyperplasia	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
- Mineralization	1.	.	.	.
COLON	-	-	-	-	-	-	-	+	-	-
- Luminal dilation	2.	.	.
CECUM	-	-	-	-	-	-	-	-	-	-
RECTUM	-	-	-	+	-	-	+	-	-	-
- Luminal dilation	.	.	.	1.	.	.	1.	.	.	.
LUNGS	+	+	+	-	-	-	+	+	-	+
- Vascular Mineraliz.	1.	1.	1.	.	.	.	1.	1.	.	1.
THYMUS	-	+G	+	-	+	+	+G	+	-	-
- Epithelial Cyst	.	P.	P.	.	P.	P.	P.	P.	.	.
- Hemorrhage	1.	.	.	.
- Congestion	.	P.
TESTES	-	-	-	-	-	-	-	-	+	-
- Sertoli C.Vacuolat.	(1.	.
EPIDIDYMIDES	-	+	-	-	-	-	-	-	-	+
- Tubular Vacuolation	.	(1.	(1.
MANDIBULAR GLANDS	-	-	-	-	-	-	-	-	-	-
SUBLINGUAL GLANDS	-	-	-	-	-	-	-	-	-	-
PANCREAS	-	-	-	-	-	-	-	-	-	-
MANDIB.LYMPH NODES	(-	(+	(+	(+	(+	(+	(+	(+	(-	(-
- Lymphoid Hyperplasia	.	(1.	(1.	(1.	(1.	(1.	(1.	(1.	.	.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 120/ 343
INDIVIDUAL ANIMAL DATA RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 04, 2000 MG/KG/DAY

ANIMAL NUMBER :

	99	100	101	102	103	104	105	106	107	108
	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO
THYROID GLAND	-	-	-	-	-	+	-	-	(+	-
- Thymic Ectopia	(P.
- C-cell hyperplasia	(1.	.
PARATHYROID GLANDS	0	(-	(-	(-	-	0	(-	(-	(-	(-
ADRENAL CORTICES	+	-	+	+	+	+	+	+	-	+
- Fatty change	1.	.	(1.	(1.	(1.	2.	(1.	(1.	.	1.
- Necrosis	1.
- Hemorrhage	1.
ADRENAL MEDULLAS	-	0	-	-	-	-	-	-	-	-
SCIATIC NERVE, LEFT	-	-	-	-	-	-	-	-	-	-
SKIN/SUBCUTIS	-	-	-	-	-	-	-	-	-	-
MAMMARY GLAND	-	+	-	-	+	+	+	-	-	-
- Adipose tissue only	.	P.	.	.	P.	P.	P.	.	.	.
EYES	-	-	-	-	-	-	-	-	+	-
- Retinal degeneration	(2.	.
OPTIC NERVES	-	-	-	-	-	-	-	-	-	-
HARDERIAN GLANDS	-	+	-	+	+	+	+	-	-	+
- Porphyrin Deposits	.	1.	.	1.	.	1.	(1.	.	.	(1.
- Inflammation	.	.	.	(1.	(1.
CEREBRUM	-	-	-	-	-	-	-	-	-	-
CEREBELLUM	-	-	-	-	-	-	-	-	-	-
BRAIN STEM/MIDBRAIN	-	-	-	-	-	-	-	-	-	-
MEDULLA OBLONGATA	-	-	-	-	-	-	-	-	-	-
SKELETAL MUSCLE	-	-	-	-	-	-	-	-	-	-

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	121/ 343
INDIVIDUAL ANIMAL DATA	RCC	:	A29553

TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 04, 2000 MG/KG/DAY

ANIMAL NUMBER :	99	100	101	102	103	104	105	106	107	108
	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO	MKO
PROSTATE GLAND	-	-	-	-	-	-	-	-	-	-
SEMINAL VESICLES	-	-	-	-	-	-	-	-	-	-
BONE MARROW, STERNUM	-	-	-	-	-	-	-	-	-	-
BONE, STERNUM	-	-	-	-	-	-	-	-	-	-
BONE, FEMUR	-	-	-	-	-	-	-	-	-	-
JOINT (HIP), LEFT	-	-	-	-	-	-	-	-	-	-
NASAL TURBINATES	-	-	-	-	-	-	-	-	-	-
SPINAL CORD, CERVIC.	-	-	-	-	-	-	-	-	-	-
SPINAL CORD, THORAC.	-	-	-	-	-	-	-	-	-	-
SPINAL CORD, LUMBAR	-	-	-	-	-	-	-	-	-	-
PITUITARY GLAND	-	-	-	-	-	-	-	-	+	-
- Cyst	P.	.
BRONCHIAL LNN	-	-	-	-	-	-	-	-	-	0
PAROTID GLANDS	-	-	-	-	-	-	-	-	-	-
ZYMBAL'S GLANDS	-	-	-	-	-	-	-	-	(-
LYMPH NODES	-	-	-	-	-	-	-	-	-	-

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 122/ 343
INDIVIDUAL ANIMAL DATA RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 04, 2000 MG/KG/DAY

ANIMAL NUMBER :	109	110	111	112	113	114	115	116	117	118
	MR1	MR1	MR1	MR1	MR1	MR1	MR1	MR1	MR1	MR1
HEART	-	-	-	-	+	-	-	-	+	-
- lymphoid C.Infiltr.	1.	.	.	.	1.	.
AORTA	-	-	-	-	-	-	-	-	-	-
TRACHEA	-	-	-	+	-	+	-	+	-	-
- Glandular Ectasia	.	.	.	1.	.	1.	.	1.	.	.
ESOPHAGUS	-	-	-	-	-	-	-	-	-	-
LIVER	+	+	+	+	+	+	+	+	+	+
- Lymphoid C.Infiltr.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
- Fatty change	1.	1.	1.	1.	1.	1.	1.	1.	.	.
SPLEEN	-	+	+	+	+	+	+	+	+	+
- Incr.Hemopoiesis	.	1.	1.	1.	1.	1.	1.	1.	1.	1.
MESENT. LYMPH NODE	+	+	+	+	+	+	+	+	+	+
- Lymphoid hyperplasia	1.	1.	1.	.	1.	.	1.	1.	.	1.
- Foamy histiocytes	2.	2.	3.	1.	3.	3.	1.	1.	3.	2.
KIDNEYS	-	+	+	+	+	+	-	+	+	+
- Hyaline Droplets	.	1.	.	1.	.	1.	.	1.	.	1.
- Tubular Basophilia	1.	.	.	1.	.
- Tubular vacuolation	.	.	1.	1.	1.	1.
URINARY BLADDER	-	-	-	-	-	-	-	-	-	-
STOMACH	-	+G	-	-	-	-	-	-	-	-
- Congestion	.	P.
DUODENUM	-	-	-	-	-	-	-	-	-	-
JEJUNUM	-	-	-	-	-	-	-	-	-	-
PEYERS PATCHES JEJ.	+	+	-	-	+	-	+	+	+	+
- Lymphoid Hyperplasia	1.	1.	.	.	1.	.	1.	1.	1.	1.
ILEUM	-	-	-	-	-	-	-	-	-	-

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 123/ 343
INDIVIDUAL ANIMAL DATA RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 04, 2000 MG/KG/DAY

ANIMAL NUMBER :	109	110	111	112	113	114	115	116	117	118
	MR1	MR1	MR1	MR1	MR1	MR1	MR1	MR1	MR1	MR1
PEYERS PATCHES ILEUM	+	+	+	+	-	+	+	+	+	+
- Lymphoid Hyperplasia	1.	1.	1.	1.	.	1.	1.	1.	1.	1.
COLON	-	-	-	-	+	-	-	-	-	-
- Luminal dilation	1.
CECUM	-	-	-	-	-	-	-	-	-	-
RECTUM	-	-	-	-	-	-	-	-	-	+
- Luminal dilation	2.
LUNGS	-	+	-	+	-	-	-	-	+	-
- Vascular Mineraliz.	.	1.	.	1.	1.	.
THYMUS	-	+G	-	-	+	+G	+G	+	-	+
- Epithelial Cyst	P.	.	.	P.	.	P.
- Hemorrhage	1.	1.	.	.	.
- Atrophy	.	1.	1.	.	.	1.
TESTES	-	-	-	-	-	-	-	+	-	-
- Spermat.Giant Cells	(1.	.	.
EPIDIDYMIDES	-	-	+	-	-	-	-	-	-	-
- Tubular Vacuolation	.	.	(1.
MANDIBULAR GLANDS	-	-	-	-	-	-	-	-	-	-
SUBLINGUAL GLANDS	-	-	(-	-	-	-	-	-	-	-
PANCREAS	-	-	-	-	-	-	-	-	-	-
MANDIB.LYMPH NODES	(+	(+	(-	(+	(+	(-	(+	(+	(+	(+
- Lymphoid Hyperplasia	(1.	(1.	.	(1.	(1.	.	(1.	(1.	(1.	(1.
THYROID GLAND	-	-	-	-	-	-	-	-	-	-
PARATHYROID GLANDS	(-	(-	(-	-	(-	(-	(-	0	-	-

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 124/ 343
INDIVIDUAL ANIMAL DATA RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 04, 2000 MG/KG/DAY

ANIMAL NUMBER :	109	110	111	112	113	114	115	116	117	118
	MR1	MR1	MR1	MR1	MR1	MR1	MR1	MR1	MR1	MR1
ADRENAL CORTICES	+	-	+	+	+	+	+	-	+	-
- Fatty change	(1.	.	1.	2.	2.	1.	2.	.	1.	.
ADRENAL MEDULLAS	-	-	-	-	-	-	-	-	-	-
SCIATIC NERVE, LEFT	-	+	+	-	-	-	+	-	-	-
- Nerve Fiber Degener.	.	1.	1.	.	.	.	1.	.	.	.
SKIN/SUBCUTIS	-	-	-	-	+G	-	-	-	-	-
- Cartilage regenerat.	1.
- Focal fibrosis	1.
MAMMARY GLAND	-	-	-	-	-	-	-	-	+	-
- Adipose tissue only	P.	.
EYES	-	-	-	-	-	-	-	-	-	(-
OPTIC NERVES	-	-	-	-	-	-	-	-	-	-
HARDERIAN GLANDS	-	-	-	-	-	+	+	-	-	-
- Porphyrin Deposits	(1.	1.	.	.	.
CEREBRUM	-	-	-	-	-	-	-	-	-	-
CEREBELLUM	-	-	-	-	-	-	-	-	-	-
BRAIN STEM/MIDBRAIN	-	-	-	-	-	-	-	-	-	-
MEDULLA OBLONGATA	-	-	-	-	-	-	-	-	-	-
SKELETAL MUSCLE	-	-	-	-	-	-	-	-	-	-
PROSTATE GLAND	-	-	-	-	-	-	-	-	-	-
SEMINAL VESICLES	-	-	-	-	-	-	-	-	-	-
BONE MARROW, STERNUM	-	-	-	-	-	-	-	-	-	-
BONE, STERNUM	-	-	-	-	-	-	-	-	-	-

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	125/ 343
INDIVIDUAL ANIMAL DATA	RCC	:	A29553

TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 04, 2000 MG/KG/DAY

ANIMAL NUMBER :	109	110	111	112	113	114	115	116	117	118
	MR1	MR1	MR1	MR1	MR1	MR1	MR1	MR1	MR1	MR1
BONE, FEMUR	-	-	-	-	-	-	-	-	-	-
JOINT (HIP), LEFT	-	-	-	-	-	-	-	-	-	-
NASAL TURBINATES	-	-	-	-	-	-	-	-	-	-
SPINAL CORD, CERVIC.	-	-	-	-	-	-	-	-	-	-
SPINAL CORD, THORAC.	-	-	-	-	-	-	-	-	-	-
SPINAL CORD, LUMBAR	-	-	-	-	-	-	-	-	-	-
PITUITARY GLAND	-	-	-	-	-	0	-	-	+	-
- Cyst	P.	.
BRONCHIAL LNN	-	-	-	-	-	-	0	-	0	-
PAROTID GLANDS	-	-	-	-	-	-	-	-	-	-
ZYMBAL'S GLANDS	-	-	-	-	-	-	-	-	-	-
LYMPH NODES	-	-	-	-	-	-	-	-	-	-

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

**PATHOLOGY REPORT
INDIVIDUAL ANIMAL DATA**

PAGE : 126/ 343
RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R
TEST SYSTEM : RAT, 13-Week, Oral
SPONSOR : DSM Nutritional Products AG
PATHOL. NO.: 11023 ROL
DATE : 14-FEB-07
PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 04, 2000 MG/KG/DAY

ANIMAL NUMBER :

	213	214	215	216	217	218	219	220	221	222
	FKO	FKO	FKO	FKO	FKO	FKO	FKO	FKO	FKO	FKO
HEART	-	-	-	-	-	-	-	-	-	-
.....										
AORTA	-	-	-	-	-	-	-	-	-	-
.....										
TRACHEA	+	-	-	+	-	-	-	-	+	-
- Glandular Ectasia	1.	.	.	1.	1.	.
.....										
ESOPHAGUS	-	-	-	-	-	-	-	-	-	-
.....										
LIVER	+	+	+	+	+	+	+G	+	+	+
- Lymphoid C.Infiltr.	1.	1.	1.	.	1.	1.	1.	1.	1.	1.
- Hematopoiesis	1.
- Fatty change	.	.	.	1.	1.	1.	2.	1.	.	.
- Necrosis	3.	.	.	.
.....										
SPLEEN	+	+	+	+	+	+	+	-	+	+
- Incr.Hemopoiesis	1.	1.	1.	2.	1.	1.	2.	.	1.	1.
.....										
MESENT. LYMPH NODE	+	+	+	+	+	+	+	+	-	+
- Lymphoid hyperplasia	.	.	1.	1.	1.	1.	1.	.	.	.
- Foamy histiocytes	1.	3.	2.	2.	3.	3.	2.	1.	.	3.
.....										
KIDNEYS	+	+	+	+	+	-	+	-	+	-
- Mineralization	1.	(1.	.
- Tubular vacuolation	1.	1.	1.	1.	1.	.	1.	.	.	.
.....										
URINARY BLADDER	-	-	-	-	-	-	-	-	-	-
.....										
STOMACH	-	-	-	-	-	-	-	-	-	-
.....										
DUODENUM	-	-	-	-	-	-	-	-	-	-
.....										
JEJUNUM	-	-	-	-	-	-	-	-	-	-
.....										
PEYERS PATCHES JEJ.	+	+	+	+	-	-	+	0	-	-
- Lymphoid Hyperplasia	1.	1.	1.	1.	.	.	1.	.	.	.
.....										
ILEUM	-	-	-	-	-	-	-	-	-	-
.....										

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 127/ 343
INDIVIDUAL ANIMAL DATA RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 04, 2000 MG/KG/DAY

ANIMAL NUMBER :	213	214	215	216	217	218	219	220	221	222
	FKO	FKO	FKO	FKO	FKO	FKO	FKO	FKO	FKO	FKO
PEYERS PATCHES ILEUM	+	+	+	+	+	+	+	+	+	-
- Lymphoid Hyperplasia	1.	1.	1.	1.	1.	1.	1.	1.	1.	.
- Mineralization	.	.	.	1.
COLON	-	+	-	-	-	-	+	-	-	-
- Luminal dilation	.	1.	2.	.	.	.
CECUM	-	-	-	-	-	-	-	-	-	-
RECTUM	-	-	+	-	-	-	-	+	-	-
- Luminal dilation	.	.	2.	2.	.	.
LUNGS	-	-	+	-	+	-	-	-	+	+
- Vascular Mineraliz.	.	.	1.	.	1.	.	.	.	1.	1.
THYMUS	-	+	+	+	+G	+	-	+	+G	+G
- Epithelial Cyst	.	P.	P.	P.	P.	P.	.	P.	P.	P.
- Hemorrhage	1.	1.
- Congestion	P.	.
- Atrophy	1.	.	.
OVARIES	-	-	+	-	+	+	+G	+	+	-
- Stromal C.Hyperpl.	.	.	1.	.	1.	1.	1.	1.	1.	.
- Congestion	P.	.	.	.
MANDIBULAR GLANDS	-	-	-	-	-	-	-	-	-	-
SUBLINGUAL GLANDS	-	-	-	-	-	-	-	-	-	-
PANCREAS	-	-	-	-	-	-	+G	-	-	-
- Congestion	P.	.	.	.
MANDIB.LYMPH NODES	(+	(-	(+	(+	(+	(+	(-	(+	(+	(-
- Lymphoid Hyperplasia	(1.	.	(1.	(1.	(1.	(1.	.	(1.	(1.	.
THYROID GLAND	-	-	-	-	-	-	-	-	-	-
PARATHYROID GLANDS	0	0	0	0	0	-	0	0	(-	0

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 128/ 343
INDIVIDUAL ANIMAL DATA RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 04, 2000 MG/KG/DAY

ANIMAL NUMBER :	213	214	215	216	217	218	219	220	221	222
	FK0	FK0	FK0	FK0	FK0	FK0	FK0	FK0	FK0	FK0
ADRENAL CORTICES	-	-	-	-	-	-	+	-	-	-
- Fatty change	(1.	.	.	.
ADRENAL MEDULLAS	-	-	-	-	-	-	-	-	-	-
SCIATIC NERVE, LEFT	-	-	-	-	-	-	-	-	+	-
- Nerve Fiber Degener.	1.	.
SKIN/SUBCUTIS	-	-	-	-	-	-	-	-	-	-
MAMMARY GLAND	-	-	-	-	-	-	-	-	-	-
EYES	-	-	-	-	-	-	-	-	-	-
OPTIC NERVES	-	-	-	(-	-	-	-	-	-	-
HARDERIAN GLANDS	+	+	-	-	+	-	-	+	+	-
- Porphyrin Deposits	(1.	1.
- Inflammation	(1.	.	.	.	1.	.
- Atrophy	(1.	.	.
CEREBRUM	-	-	-	-	-	-	-	-	-	-
CEREBELLUM	-	-	-	-	-	-	-	-	-	-
BRAIN STEM/MIDBRAIN	-	-	-	-	-	-	-	-	-	-
MEDULLA OBLONGATA	-	-	-	-	-	-	-	-	-	-
SKELETAL MUSCLE	-	-	-	-	-	-	-	-	-	-
UTERUS	+	+	+	+	+	+	+	+	+	+
- Cycle:Metestrus	.	P.	P.	P.	.
- Cycle:Estrus	P.	P.	.	.	.
- Cycle:Proestrus	P.	.	P.	.	.
- Cycle:Diestrus	.	.	.	P.	P.	P.
CERVIX	-	-	-	-	-	-	-	-	-	-

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 129/ 343
INDIVIDUAL ANIMAL DATA RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 04, 2000 MG/KG/DAY

ANIMAL NUMBER :	213	214	215	216	217	218	219	220	221	222
	FKO	FKO	FKO	FKO	FKO	FKO	FKO	FKO	FKO	FKO
VAGINA	-	-	-	-	-	-	-	-	-	-
BONE MARROW, STERNUM	-	-	-	-	-	-	-	-	-	-
BONE, STERNUM	-	-	-	-	-	-	-	-	-	-
BONE, FEMUR	-	-	-	-	-	-	-	-	-	-
JOINT (HIP), LEFT	-	-	-	-	-	-	-	-	-	-
NASAL TURBINATES	-	-	-	-	-	-	-	-	-	-
SPINAL CORD, CERVIC.	-	-	-	-	-	-	-	-	-	-
SPINAL CORD, THORAC.	-	-	-	-	-	-	-	-	-	-
SPINAL CORD, LUMBAR	-	-	-	-	-	-	-	-	-	-
PITUITARY GLAND	-	-	-	-	-	-	-	-	-	-
BRONCHIAL LNN	-	-	-	-	-	-	-	+	-	-
- Blood in sinuses	3.	.	.
PAROTID GLANDS	-	-	-	-	-	-	-	-	-	-
ZYMBAL'S GLANDS	-	-	-	-	-	-	-	0	-	-
LYMPH NODES	-	-	-	-	-	-	-	-	-	-
BODY CAVITIES	'	'	'	'	-G	'	'	'	'	'

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 130/ 343
INDIVIDUAL ANIMAL DATA RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 04, 2000 MG/KG/DAY

ANIMAL NUMBER :	223	224	225	226	227	228	229	230	231	232
	FK0	FK0	FK0	FK0	FK0	FK0	FK0	FK0	FK0	FK0
HEART	-	-	-	-	-	-	-	-	-	-
AORTA	-	-	-	-	-	-	-	-	-	-
TRACHEA	+	-	-	-	-	+	+	+	-	+
- Glandular Ectasia	1.	1.	1.	1.	.	1.
ESOPHAGUS	-	-	-	-	-	-	-	-	-	-
LIVER	+	+	+	+	+	+	+	+	+	+
- Lymphoid C.Infiltr.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
- Hematopoiesis	1.	1.	1.	1.
- Fatty change	1.	1.	1.	1.	2.	1.	.	.	1.	1.
SPLEEN	+	+	-	+	+	+	+	+	+	+
- Incr.Hemopoiesis	1.	1.	.	1.	1.	2.	1.	1.	2.	1.
MESENT. LYMPH NODE	+	+	+	+	+	+	+	+	+	+
- Lymphoid hyperplasia	1.	.	.	.
- Foamy histiocytes	2.	1.	2.	2.	2.	1.	3.	3.	3.	1.
KIDNEYS	+	+	+	+	+	+	+	+	+	+
- Mineralization	(1.	(1.	(1.	.	.	(1.	1.	1.	1.	.
- Tubular vacuolation	1.	.	1.	1.	1.	.	1.	1.	.	1.
URINARY BLADDER	-	-	-	-	0	-	-	-	-	-
STOMACH	-	-	-	-	-	-	-	-	-	-
DUODENUM	-	-	-	-	-	-	-	-	-	-
JEJUNUM	-	-	-	-	-	-	-	-	-	-
PEYERS PATCHES JEJ.	+	-	-	-	+	-	-	+	-	+
- Lymphoid Hyperplasia	1.	.	.	.	1.	.	.	1.	.	1.
ILEUM	-	-	-	-	-	-	-	-	-	-

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 131/ 343
INDIVIDUAL ANIMAL DATA RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 04, 2000 MG/KG/DAY

ANIMAL NUMBER :	223	224	225	226	227	228	229	230	231	232
	FKO	FKO	FKO	FKO	FKO	FKO	FKO	FKO	FKO	FKO
PEYERS PATCHES ILEUM	+	+	+	-	+	-	+	+	+	+
- Lymphoid Hyperplasia	1.	1.	1.	.	1.	.	1.	1.	1.	1.
COLON	-	-	+	-	-	-	-	-	-	-
- Luminal dilation	.	.	1.
CECUM	-	-	-	-	-	-	-	-	-	-
RECTUM	-	-	-	-	-	-	-	-	+	-
- Luminal dilation	1.	.
LUNGS	-	-	+	+	-	-	+	+	-	-
- Vascular Mineraliz.	.	.	.	1.	.	.	1.	1.	.	.
- Alveol.Histiocytosis	.	.	1.
THYMUS	-	+	-	-	-	+G	+	-	+G	+
- Epithelial Cyst	.	P.	.	.	.	P.	P.	.	P.	P.
- Hemorrhage	1.
- Congestion	P.	.
- Atrophy	1.	.	.	1.	.
OVARIES	+	+	+	-	+	+	+	-	-	+
- Stromal C.Hyperpl.	1.	1.	1.	.	1.	1.	(1.	.	.	1.
MANDIBULAR GLANDS	-	-	-	-	-	-	-	-	-	-
SUBLINGUAL GLANDS	-	-	0	-	-	-	-	-	-	-
PANCREAS	-	-	-	-	-	-	-	-	-	-
MANDIB.LYMPH NODES	(+	(+	(+	(+	(+	(+	(+	(+	(-	(-
- Lymphoid Hyperplasia	(1.	(1.	(1.	(1.	(1.	(1.	(1.	(1.	.	.
THYROID GLAND	-	-	-	-	-	-	-	-	-	-
PARATHYROID GLANDS	(-	(-	-	0	0	0	-	(-	0	-

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 132/ 343
INDIVIDUAL ANIMAL DATA RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 04, 2000 MG/KG/DAY

ANIMAL NUMBER :	223	224	225	226	227	228	229	230	231	232
	FK0	FK0	FK0	FK0	FK0	FK0	FK0	FK0	FK0	FK0
ADRENAL CORTICES	-	+	-	-	-	-	-	-	-	+
- Fatty change	(1.
- Mineralization	.	(2.
ADRENAL MEDULLAS	-	-	-	-	-	-	-	-	(-	-
SCIATIC NERVE, LEFT	+	-	-	-	+	-	-	+	-	-
- Nerve Fiber Degener.	1.	.	.	.	1.	.	.	1.	.	.
SKIN/SUBCUTIS	-	-	-	-	-	-	-	-	+G	+G
- Hair Follicle Atrophy	3.
- Tail, bone atrophy	1.	.
MAMMARY GLAND	-	-	-	-	-	-	-	-	-	-
EYES	-	-	-	-	-	-	-	-	-	-
OPTIC NERVES	-	-	-	-	-	-	-	-	-	-
HARDERIAN GLANDS	-	+	-	-	+	+	+	-	-	-
- Porphyrin Deposits	.	1.	.	.	.	(1.	(1.	.	.	.
- Inflammation	(1.
CEREBRUM	-	-	-	-	-	-	-	-	-	-
CEREBELLUM	-	-	-	-	-	-	-	-	-	-
BRAIN STEM/MIDBRAIN	-	-	-	-	-	-	-	-	-	-
MEDULLA OBLONGATA	-	-	-	-	-	-	-	-	-	-
SKELETAL MUSCLE	-	-	-	-	-	-	-	-	-	-
UTERUS	+	+	+	+	+	+	+	+	+	+
- Cycle:Metestrus	.	P.	.	P.
- Cycle:Estrus	P.	.	.	.	P.	P.	.	.	.	P.
- Cycle:Proestrus	P.	.	.
- Cycle:Diestrus	.	.	P.	.	.	.	P.	.	P.	.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	133/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 04, 2000 MG/KG/DAY

ANIMAL NUMBER :	223	224	225	226	227	228	229	230	231	232
	FK0	FK0	FK0	FK0	FK0	FK0	FK0	FK0	FK0	FK0
CERVIX	-	-	-	-	-	-	-	-	-	-
VAGINA	-	-	-	-	-	-	-	-	-	-
BONE MARROW, STERNUM	-	-	-	-	-	-	-	-	-	-
BONE, STERNUM	-	-	-	-	-	-	-	-	-	-
BONE, FEMUR	-	-	-	-	-	-	-	-	-	-
JOINT (HIP), LEFT	-	-	-	-	-	-	-	-	-	-
NASAL TURBINATES	-	-	-	-	-	-	-	-	-	-
SPINAL CORD, CERVIC.	-	-	-	-	-	-	-	-	-	-
SPINAL CORD, THORAC.	-	-	-	-	-	-	-	-	-	-
SPINAL CORD, LUMBAR	-	-	-	-	-	-	-	-	-	-
PITUITARY GLAND	-	-	-	-	-	-	-	-	-	-
BRONCHIAL LNN	-	-	-	-	-	-	-	-	0	-
PAROTID GLANDS	-	-	-	-	-	-	-	-	-	-
ZYMBAL'S GLANDS	-	-	-	-	-	-	-	-	-	-
LYMPH NODES	-	-	-	-	-	-	-	-	-	-

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT PAGE : 134/ 343
INDIVIDUAL ANIMAL DATA RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 04, 2000 MG/KG/DAY

ANIMAL NUMBER :	233	234	235	236	237	238	239	240	241	242
	FR1	FR1	FR1	FR1	FR1	FR1	FR1	FR1	FR1	FR1
HEART	-	-	-	-	-	-	-	-	-	-
AORTA	-	-	-	-	-	-	-	-	-	-
TRACHEA	-	-	+	-	-	-	-	-	-	-
- Glandular Ectasia	.	.	1.
ESOPHAGUS	-	-	-	-	-	-	-	-	-	-
LIVER	+	+	+	+	+	+	+	+	+	+
- Lymphoid C.Infiltr.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
- Fatty change	1.	1.	1.	1.	1.	1.	1.	.	.	.
SPLEEN	+	+	+	+	+	+	+	+	+	+
- Incr.Hemopoiesis	1.	1.	1.	1.	1.	2.	1.	1.	1.	1.
MESENT. LYMPH NODE	+	+	+	+	+	+	+	+	+	+
- Lymphoid hyperplasia	.	.	1.	.	.	.	1.	1.	1.	1.
- Foamy histiocytes	2.	3.	1.	1.	3.	1.	2.	1.	3.	1.
KIDNEYS	-	-	+	+	+	+	+	+	+	+
- Mineralization	.	.	.	1.	1.	.	1.	.	(1.	.
- Pyelitis	.	.	(3.
- Transit.C.Hyperpl.	.	.	(3.
- Tubular vacuolation	1.	1.	1.	1.	.	1.
URINARY BLADDER	-	-	-	-	-	-	-	-	-	-
STOMACH	-	-	-	+	-	-	-	-	-	-
- Gld.Stomach Erosion	.	.	.	1.
DUODENUM	-	-	-	-	-	-	-	-	-	-
JEJUNUM	-	-	-	-	-	-	-	-	-	-
PEYERS PATCHES JEJ.	-	-	+	-	-	-	-	+	-	-
- Lymphoid Hyperplasia	.	.	1.	1.	.	.
ILEUM	-	-	-	-	-	-	-	-	-	-

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

**PATHOLOGY REPORT
INDIVIDUAL ANIMAL DATA**

PAGE : 135/ 343
RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R
TEST SYSTEM : RAT, 13-Week, Oral
SPONSOR : DSM Nutritional Products AG
PATHOL. NO.: 11023 ROL
DATE : 14-FEB-07
PathData®System V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 04, 2000 MG/KG/DAY

ANIMAL NUMBER :

	233	234	235	236	237	238	239	240	241	242
	FR1	FR1	FR1	FR1	FR1	FR1	FR1	FR1	FR1	FR1
PEYERS PATCHES ILEUM	+	-	+	-	-	-	+	+	-	-
- Lymphoid Hyperplasia	1.	.	1.	.	.	.	1.	1.	.	.
COLON	+	-	-	+	+	+	+	+	-	+
- Luminal dilation	1.	.	.	1.	1.	1.	1.	1.	.	1.
CECUM	-	-	-	-	-	-	-	-	-	-
RECTUM	-	-	-	+	-	+	-	+	-	-
- Luminal dilation	.	.	.	1.	.	2.	.	3.	.	.
LUNGS	-	-	-	+	-	-	-	-	-	+
- Vascular Mineraliz.	.	.	.	1.	1.
THYMUS	+	-	-	+	-	+	+G	+	+G	+
- Epithelial Cyst	P.	.	.	P.	.	P.	P.	P.	P.	P.
- Hemorrhage	2.	.
- Atrophy	1.	.
OVARIES	+	+	+	+	+	+	+	+	+	+
- Stromal C.Hyperpl.	1.	2.	1.	1.	1.	1.	(1.	1.	1.	(1.
MANDIBULAR GLANDS	-	-	-	-	-	-	-	-	-	-
SUBLINGUAL GLANDS	-	-	-	-	-	-	-	-	-	-
PANCREAS	-	-	-	-	-	-	-	-	-	-
MANDIB.LYMPH NODES	(-	(+	(+	(+	(-	(+	(+	(+	(+G	(+
- Lymphoid Hyperplasia	.	(1.	(1.	(1.	.	(1.	(1.	(1.	(1.	(1.
- Congestion	(P.	.
THYROID GLAND	-	-	-	-	-	-	-	-	-	+
- Thymic Ectopia	P.
PARATHYROID GLANDS	(-	(-	(-	(-	-	(-	0	(-	(-	(-
ADRENAL CORTICES	+	-	-	-	-	-	-	-	+	-
- Fatty change	1.	(1.	.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	136/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 04, 2000 MG/KG/DAY

ANIMAL NUMBER :	233	234	235	236	237	238	239	240	241	242
	FR1	FR1	FR1	FR1	FR1	FR1	FR1	FR1	FR1	FR1
ADRENAL MEDULLAS	-	-	-	-	-	-	-	-	(-	-
SCIATIC NERVE, LEFT	-	+	-	-	-	-	+	-	-	+
- Nerve Fiber Degener.	.	1.	1.	.	.	1.
SKIN/SUBCUTIS	-	-	-	-	-	-	-	-	-	-
MAMMARY GLAND	-	-	-	-	-	-	-	-	-	-
EYES	-	-	-	-	-	-	-	-	-	-
OPTIC NERVES	(-	(-	-	-	-	-	-	-	-	-
HARDERIAN GLANDS	-	-	-	-	-	-	+	+	-	+
- Porphyrin Deposits	(1.	.	1.
- Inflammation	(1.	.	.	.
CEREBRUM	-	-	-	-	-	-	-	-	-	-
CEREBELLUM	-	-	-	-	-	-	-	-	-	-
BRAIN STEM/MIDBRAIN	-	-	-	-	-	-	-	-	-	-
MEDULLA OBLONGATA	-	-	-	-	-	-	-	-	-	-
SKELETAL MUSCLE	-	-	-	-	-	-	+	-	-	-
- Lymphoid C.Infiltr.	1.	.	.	.
UTERUS	+	+	+	+	+	+	+	+	+	+
- Cycle:Metestrus	.	.	P.	.	.	P.	P.	.	P.	.
- Cycle:Estrus	.	P.
- Cycle:Proestrus	P.	.	.	P.	P.
- Cycle:Diestrus	P.	.	P.
CERVIX	-	-	-	-	-	-	-	-	-	-
VAGINA	-	-	-	-	-	-	-	-	-	-
BONE MARROW, STERNUM	-	-	-	-	-	-	-	-	-	-

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	137/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TABLE OF INDIVIDUAL MICROSCOPIC FINDINGS (AOFT)
DOSE GROUP : 04, 2000 MG/KG/DAY

	233	234	235	236	237	238	239	240	241	242
	FR1	FR1	FR1	FR1	FR1	FR1	FR1	FR1	FR1	FR1
BONE, STERNUM	-	-	-	-	-	-	-	-	-	-
BONE, FEMUR	-	-	-	-	-	-	-	-	-	-
JOINT (HIP), LEFT	-	-	-	-	-	-	-	-	-	-
NASAL TURBINATES	-	-	-	-	-	-	-	-	-	-
SPINAL CORD, CERVIC.	-	-	-	-	-	-	-	-	-	-
SPINAL CORD, THORAC.	-	-	-	-	-	-	-	-	-	-
SPINAL CORD, LUMBAR	-	-	-	-	-	-	-	-	-	-
PITUITARY GLAND	-	-	-	-	-	-	-	-	-	-
BRONCHIAL LNN	-	-	-	-	-	-	-	-	-	-
PAROTID GLANDS	-	-	-	-	-	-	-	-	-	-
ZYMBAL'S GLANDS	-	-	-	-	-	-	-	-	-	-
LYMPH NODES	-	-	-	-	-	-	-	-	-	-

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

**PATHOLOGY REPORT
INDIVIDUAL ANIMAL DATA**

PAGE : 138/ 343
RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

ANIMAL HEADING DATA
DOSE GROUP : 01, 0 MG/KG/DAY

ANIMAL NUMBER	SEX M/F	DEFINED AND FINAL STATE OF NECROPSY	TEST DAYS	FIRST AND LAST DAY UNDER TEST	DATE OF NECROPSY
1	M	K0	K0	92	02-JAN-06 03-APR-06 04-APR-06
2	M	K0	K0	92	02-JAN-06 03-APR-06 04-APR-06
3	M	K0	K0	92	02-JAN-06 03-APR-06 04-APR-06
4	M	K0	K0	92	02-JAN-06 03-APR-06 04-APR-06
5	M	K0	K0	92	02-JAN-06 03-APR-06 04-APR-06
6	M	K0	K0	92	02-JAN-06 03-APR-06 04-APR-06
7	M	K0	K0	92	02-JAN-06 03-APR-06 04-APR-06
8	M	K0	K0	92	02-JAN-06 03-APR-06 04-APR-06
9	M	K0	K0	92	02-JAN-06 03-APR-06 04-APR-06
10	M	K0	K0	92	02-JAN-06 03-APR-06 04-APR-06
11	M	K0	K0	95	02-JAN-06 06-APR-06 07-APR-06
12	M	K0	K0	95	02-JAN-06 06-APR-06 07-APR-06
13	M	K0	K0	95	02-JAN-06 06-APR-06 07-APR-06
14	M	K0	K0	95	02-JAN-06 06-APR-06 07-APR-06
15	M	K0	K0	95	02-JAN-06 06-APR-06 07-APR-06
16	M	K0	K0	95	02-JAN-06 06-APR-06 07-APR-06
17	M	K0	K0	95	02-JAN-06 06-APR-06 07-APR-06
18	M	K0	K0	95	02-JAN-06 06-APR-06 07-APR-06
19	M	K0	K0	95	02-JAN-06 06-APR-06 07-APR-06
20	M	K0	K0	95	02-JAN-06 06-APR-06 07-APR-06
21	M	R1	R1	92	02-JAN-06 03-APR-06 02-MAY-06
22	M	R1	R1	92	02-JAN-06 03-APR-06 02-MAY-06
23	M	R1	R1	92	02-JAN-06 03-APR-06 02-MAY-06
24	M	R1	R1	92	02-JAN-06 03-APR-06 02-MAY-06
25	M	R1	R1	92	02-JAN-06 03-APR-06 02-MAY-06
26	M	R1	R1	92	02-JAN-06 03-APR-06 02-MAY-06
27	M	R1	R1	92	02-JAN-06 03-APR-06 02-MAY-06
28	M	R1	R1	92	02-JAN-06 03-APR-06 02-MAY-06
29	M	R1	R1	92	02-JAN-06 03-APR-06 02-MAY-06
30	M	R1	R1	92	02-JAN-06 03-APR-06 02-MAY-06
125	F	K0	K0	93	02-JAN-06 04-APR-06 05-APR-06
126	F	K0	K0	93	02-JAN-06 04-APR-06 05-APR-06
127	F	K0	K0	93	02-JAN-06 04-APR-06 05-APR-06
128	F	K0	K0	93	02-JAN-06 04-APR-06 05-APR-06
129	F	K0	K0	93	02-JAN-06 04-APR-06 05-APR-06
130	F	K0	K0	93	02-JAN-06 04-APR-06 05-APR-06
131	F	K0	K0	93	02-JAN-06 04-APR-06 05-APR-06
132	F	K0	K0	93	02-JAN-06 04-APR-06 05-APR-06
133	F	K0	K0	93	02-JAN-06 04-APR-06 05-APR-06
134	F	K0	K0	93	02-JAN-06 04-APR-06 05-APR-06

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

**PATHOLOGY REPORT
INDIVIDUAL ANIMAL DATA**

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RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

ANIMAL HEADING DATA
DOSE GROUP : 01, 0 MG/KG/DAY

ANIMAL NUMBER	SEX M/F	DEFINED AND FINAL STATE OF NECROPSY	TEST DAYS	FIRST AND LAST DAY UNDER TEST	DATE OF NECROPSY
135	F	K0 K0	94	02-JAN-06 05-APR-06	06-APR-06
136	F	K0 K0	94	02-JAN-06 05-APR-06	06-APR-06
137	F	K0 K0	94	02-JAN-06 05-APR-06	06-APR-06
138	F	K0 K0	94	02-JAN-06 05-APR-06	06-APR-06
139	F	K0 K0	94	02-JAN-06 05-APR-06	06-APR-06
140	F	K0 K0	94	02-JAN-06 05-APR-06	06-APR-06
141	F	K0 K0	94	02-JAN-06 05-APR-06	06-APR-06
142	F	K0 K0	94	02-JAN-06 05-APR-06	06-APR-06
143	F	K0 K0	94	02-JAN-06 05-APR-06	06-APR-06
144	F	K0 K0	94	02-JAN-06 05-APR-06	06-APR-06
145	F	R1 R1	92	02-JAN-06 03-APR-06	02-MAY-06
146	F	R1 R1	92	02-JAN-06 03-APR-06	02-MAY-06
147	F	R1 R1	92	02-JAN-06 03-APR-06	02-MAY-06
148	F	R1 R1	92	02-JAN-06 03-APR-06	02-MAY-06
149	F	R1 R1	92	02-JAN-06 03-APR-06	02-MAY-06
150	F	R1 R1	92	02-JAN-06 03-APR-06	02-MAY-06
151	F	R1 R1	92	02-JAN-06 03-APR-06	02-MAY-06
152	F	R1 R1	92	02-JAN-06 03-APR-06	02-MAY-06
153	F	R1 R1	92	02-JAN-06 03-APR-06	02-MAY-06
154	F	R1 R1	92	02-JAN-06 03-APR-06	02-MAY-06

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	140/ 343
INDIVIDUAL ANIMAL DATA	RCC	:	A29553

TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	MALE

* STATE AT NECROPSY: KO
DAYS ON TEST : 92 * ANIMAL NO. : 1
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1
LIVER:
-Lymphoid cell infiltration, multifocal, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Hyaline droplets, bilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
LUNGS:
-Vascular mineralization, focal, grade 1
THYMUS:
-Epithelial Cyst
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
PARATHYROID GLANDS:
Tissue not present for histologic examination
MAMMARY GLAND:
-Adipose tissue only
ZYMBAL'S GLANDS:
Tissue not present for histologic examination
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	141/ 343
INDIVIDUAL ANIMAL DATA	RCC	:	A29553

TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	MALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 92 * ANIMAL NO. : 2
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
THYMUS:
-Epithelial Cyst
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Only one of paired organs examined/present
ADRENAL CORTICES:
-Fatty change, bilateral, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	MALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 92 * ANIMAL NO. : 3
.....

* NECROPSY FINDINGS

THYMUS:
01: FOCUS/FOCI, ISOLATED, D=1 MM, DARK RED.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

HEART:
-lymphoid Cell infiltration, grade 1
LIVER:
-Lymphoid cell infiltration, multifocal, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Hyaline droplets, bilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
-Mineralization, grade 1
THYMUS:
-Hemorrhage, focal, grade 1
This finding corresponds to necropsy observation no: 01.
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
ADRENAL CORTICES:
-Fatty change, bilateral, grade 1
MAMMARY GLAND:
-Adipose tissue only

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	143/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 3

.....

PITUITARY GLAND:
-Cyst, single, pars distalis
ZYMBAL'S GLANDS:
Tissue not present for histologic examination
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0	
DAYS ON TEST	: 92
* ANIMAL NO.	: 4

.....

* NECROPSY FINDINGS

THYMUS:
01: FOCUS/FOCI, SEVERAL, D=1 MM, DARK RED.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, multifocal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
LUNGS:
-Vascular mineralization, focal, grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 4

THYMUS:
-Hemorrhage, focal, grade 1
This finding corresponds to necropsy observation no: 01.
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Only one of paired organs examined/present
ADRENAL CORTICES:
-Fatty change, bilateral, grade 1
HARDERIAN GLANDS:
-Porphyrin deposits, bilateral, grade 1
PITUITARY GLAND:
-Cyst, single, pars distalis
ZYMBAL'S GLANDS:
Tissue not present for histologic examination
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0		
DAYS ON TEST	:	92
		* ANIMAL NO. : 5

* NECROPSY FINDINGS

SKIN/SUBCUTIS:
01: TIP OF TAIL: DEJECTED.
NO OTHER NECROPSY OBSERVATIONS NOTED

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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<i>TEST ARTICLE</i>	: ULTRAZINE FG-R	<i>PATHOL. NO.:</i>	11023 ROL
<i>TEST SYSTEM</i>	: RAT, 13-Week, Oral	<i>DATE</i>	: 14-FEB-07
<i>SPONSOR</i>	: DSM Nutritional Products AG	<i>PathData®System</i>	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP : 01, 0 MG/KG/DAY	MALE

CONT./FF. ANIMAL NO. : 5

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1
LIVER:
-Lymphoid cell infiltration, focal, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
KIDNEYS:
-Hyaline droplets, bilateral, grade 1
LUNGS:
-Vascular mineralization, focal, grade 1
THYMUS:
-Epithelial Cyst
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
PARATHYROID GLANDS:
Tissue not present for histologic examination
ADRENAL CORTICES:
-Fatty change, bilateral, grade 2
SKIN/SUBCUTIS:
-Tail, bone atrophy, grade 1
This finding corresponds to necropsy observation no: 01.
HARDERIAN GLANDS:
-Porphyrin deposits, unilateral, grade 1
-Inflammation, focal, acute, unilateral, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	MALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 92 * ANIMAL NO. : 6
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

HEART:
-lymphoid Cell infiltration, grade 1
LIVER:
-Lymphoid cell infiltration, multifocal, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Hyaline droplets, bilateral, grade 1
LUNGS:
-Osseous metaplasia, focal, grade 1
THYMUS:
-Epithelial Cyst
SUBLINGUAL GLANDS:
Only one of paired organs examined/present
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Tissue not present for histologic examination
ADRENAL CORTICES:
-Fatty change, unilateral, grade 1
MAMMARY GLAND:
-Adipose tissue only
HARDERIAN GLANDS:
-Porphyrin deposits, unilateral, grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	147/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 6

ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0	
DAYS ON TEST	: 92
* ANIMAL NO.	: 7

* NECROPSY FINDINGS

THYMUS:
01: FOCUS/FOCI, SEVERAL, D=1 MM, DARK RED.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, multifocal, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Tubular basophilia, focal, unilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
LUNGS:
-Vascular mineralization, focal, grade 1
THYMUS:
-Hemorrhage, focal, grade 1
This finding corresponds to necropsy observation no: 01.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	148/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 7

.....

MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present

PARATHYROID GLANDS:
Tissue not present for histologic examination

MAMMARY GLAND:
-Adipose tissue only

ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0	
DAYS ON TEST	: 92
	* ANIMAL NO. : 8

.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1

SPLEEN:
-Increased hemopoiesis, grade 1

KIDNEYS:
-Hyaline droplets, bilateral, grade 1
-Tubular basophilia, focal, bilateral, grade 1

PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1

PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1

MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP : 01, 0 MG/KG/DAY	MALE

CONT./FF. ANIMAL NO. : 8

.....

THYROID GLAND (BOTH LOBES):
-Lymphoid cell infiltration, focal, bilateral, grade 1
PARATHYROID GLANDS:
Only one of paired organs examined/present
ADRENAL CORTICES:
-Fatty change, unilateral, grade 1
HARDERIAN GLANDS:
-Porphyrin deposits, unilateral, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0		
DAYS ON TEST : 92	* ANIMAL NO. :	9

.....

* NECROPSY FINDINGS

THYMUS:
01: FOCUS/FOCI, SEVERAL, D=1 MM, DARK RED.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Hyaline droplets, bilateral, grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	150/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 9

PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
THYMUS:
-Epithelial Cyst
-Hemorrhage, multifocal, grade 1
This finding corresponds to necropsy observation no: 01.
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
PARATHYROID GLANDS:
Only one of paired organs examined/present
ADRENAL CORTICES:
-Fatty change, bilateral, grade 2
MAMMARY GLAND:
-Adipose tissue only
HARDERIAN GLANDS:
-Porphyrin deposits, bilateral, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0	
DAYS ON TEST	: 92
* ANIMAL NO. :	10

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	151/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 10

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1
LIVER:
-Lymphoid cell infiltration, focal, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
KIDNEYS:
-Hyaline droplets, bilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
-Mineralization, grade 1
LUNGS:
-Vascular mineralization, focal, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
PARATHYROID GLANDS:
Only one of paired organs examined/present
MAMMARY GLAND:
-Adipose tissue only
HARDERIAN GLANDS:
-Porphyrin deposits, bilateral, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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<i>TEST ARTICLE</i>	: ULTRAZINE FG-R	<i>PATHOL. NO.:</i>	11023 ROL
<i>TEST SYSTEM</i>	: RAT, 13-Week, Oral	<i>DATE</i>	: 14-FEB-07
<i>SPONSOR</i>	: DSM Nutritional Products AG	<i>PathData®System</i>	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	MALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 95 * ANIMAL NO. : 11
.....

* NECROPSY FINDINGS

THYMUS:
01: FOCUS/FOCI, ISOLATED, D=1 MM, DARK RED.
PROSTATE GLAND:
01: FOCUS/FOCI, SEVERAL, D=2 MM, GRAY WHITE.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1
LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Hyaline droplets, bilateral, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
LUNGS:
-Vascular mineralization, multifocal, grade 1
THYMUS:
-Epithelial Cyst
-Hemorrhage, focal, grade 1
This finding corresponds to necropsy observation no: 01.
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Only one of paired organs examined/present

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 11

ADRENAL CORTICES:
-Fatty change, unilateral, grade 1
MAMMARY GLAND:
-Adipose tissue only
HARDERIAN GLANDS:
-Porphyrin deposits, unilateral, grade 1
PROSTATE GLAND:
Nothing abnormal discovered corresponding to necropsy obser-
vation no.01.
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0	
DAYS ON TEST	: 95
* ANIMAL NO.	: 12

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1
LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
KIDNEYS:
-Hyaline droplets, bilateral, grade 1
-Tubular basophilia, focal, unilateral, grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 12

PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
THYMUS:
-Epithelial Cyst, multiple
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
PARATHYROID GLANDS:
Only one of paired organs examined/present
ADRENAL CORTICES:
-Fatty change, bilateral, grade 1
MAMMARY GLAND:
-Adipose tissue only
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0	
DAYS ON TEST	: 95
* ANIMAL NO. :	13

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, multifocal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 13

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MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Hyaline droplets, bilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
LUNGS:
-Vascular mineralization, focal, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 2
ADRENAL CORTICES:
-Fatty change, bilateral, grade 1
MAMMARY GLAND:
-Adipose tissue only
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0		
DAYS ON TEST	:	95
	* ANIMAL NO. :	14

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	156/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
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SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 14

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1
LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Hyaline droplets, bilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
LUNGS:
-Vascular mineralization, focal, grade 1
THYMUS:
-Atrophy, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
PARATHYROID GLANDS:
Only one of paired organs examined/present
ADRENAL CORTICES:
-Fatty change, bilateral, grade 2
ADRENAL MEDULLAS:
Tissue not present for histologic examination
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP : 01, 0 MG/KG/DAY	MALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 95 * ANIMAL NO. : 15
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, multifocal, grade 1
-Fatty change, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Hyaline droplets, bilateral, grade 1
-Tubular basophilia, focal, bilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
TESTES:
-Sertoli cell vacuolation, unilateral, grade 1
-Tubular atrophy, focal, unilateral, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
ADRENAL CORTICES:
-Fatty change, bilateral, grade 1
MAMMARY GLAND:
-Adipose tissue only
ZYMBAL'S GLANDS:
Only one of paired organs examined/present
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	MALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 95 * ANIMAL NO. : 16
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1
LIVER:
-Lymphoid cell infiltration, multifocal, grade 1
-Hematopoiesis, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Hyaline droplets, bilateral, grade 1
-Tubular basophilia, focal, unilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
LUNGS:
-Vascular mineralization, focal, grade 1
THYMUS:
-Epithelial Cyst, multiple
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Only one of paired organs examined/present
ADRENAL CORTICES:
-Inflammation, focal, chronic, bilateral, grade 1

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TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 16

MAMMARY GLAND:
-Adipose tissue only
SKELETAL MUSCLE:
-Lymphoid cell infiltration, focal, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0	
DAYS ON TEST	: 95
* ANIMAL NO.	: 17

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1
LIVER:
-Lymphoid cell infiltration, multifocal, grade 1
-Hematopoiesis, focal, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
KIDNEYS:
-Hyaline droplets, bilateral, grade 1
LUNGS:
-Vascular mineralization, focal, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
ADRENAL CORTICES:
-Fatty change, bilateral, grade 2

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TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP : 01, 0 MG/KG/DAY	MALE

CONT./FF. ANIMAL NO. : 17

MAMMARY GLAND:
-Adipose tissue only
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0	
DAYS ON TEST : 95	* ANIMAL NO. : 18

* NECROPSY FINDINGS

TESTES:
01: BOTH SIDES: REDUCED IN SIZE, D=12X8 MM.
EPIDIDYMIDES:
01: BOTH SIDES: REDUCED IN SIZE.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, multifocal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
KIDNEYS:
-Hyaline droplets, bilateral, grade 1
RECTUM:
-Luminal dilation, grade 2
LUNGS:
-Vascular mineralization, focal, grade 1
THYMUS:
-Epithelial Cyst

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TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 18

TESTES:
-Tubular atrophy, bilateral, grade 4
This finding corresponds to necropsy observation no: 01.
EPIDIDYMIDES:
-Intratubular cellular debris, bilateral, grade 3
This finding corresponds to necropsy observation no: 01.
-Fibrosis, interstitial, bilateral, grade 2
This finding corresponds to necropsy observation no: 01.
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
PARATHYROID GLANDS:
Only one of paired organs examined/present
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0		
DAYS ON TEST	:	95
		* ANIMAL NO. : 19

* NECROPSY FINDINGS
NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS
LIVER:
-Lymphoid cell infiltration, multifocal, grade 1
-Hematopoiesis, focal, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
KIDNEYS:
-Hyaline droplets, bilateral, grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 19

PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 2
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 2
LUNGS:
-Vascular mineralization, focal, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 2
PARATHYROID GLANDS:
Only one of paired organs examined/present
MAMMARY GLAND:
-Adipose tissue only
PITUITARY GLAND:
-Cyst, single, pars distalis
BRONCHIAL LYMPH NODE:
-Lymphoid hyperplasia, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0	
DAYS ON TEST	: 95
* ANIMAL NO. :	20

* NECROPSY FINDINGS

THYMUS:
01: FOCUS/FOCI, SEVERAL, D=1 MM, DARK RED.
NO OTHER NECROPSY OBSERVATIONS NOTED

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ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 20

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Hyaline droplets, bilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
-Mineralization, grade 1
THYMUS:
-Hemorrhage, multifocal, grade 1
This finding corresponds to necropsy observation no: 01.
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
PARATHYROID GLANDS:
Tissue not present for histologic examination
ADRENAL CORTICES:
-Fatty change, bilateral, grade 3
MAMMARY GLAND:
-Adipose tissue only
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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<i>SPONSOR</i>	:	DSM Nutritional Products AG	<i>PathData®System</i>	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS		
DOSE GROUP	:	01, 0 MG/KG/DAY
		MALE

* STATE AT NECROPSY: R1
DAYS ON TEST : 92 * ANIMAL NO. : 21
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Tubular basophilia, focal, unilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
PARATHYROID GLANDS:
Only one of paired organs examined/present
ADRENAL CORTICES:
-Fatty change, bilateral, grade 1
OPTIC NERVES:
Only one of paired organs examined/present
HARDERIAN GLANDS:
-Porphyrin deposits, unilateral, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	MALE

* STATE AT NECROPSY: R1
DAYS ON TEST : 92 * ANIMAL NO. : 22
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, multifocal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Hyaline droplets, bilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
COLON:
-Luminal dilation, grade 1
RECTUM:
-Luminal dilation, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
PARATHYROID GLANDS:
Only one of paired organs examined/present
SCIATIC NERVE, LEFT:
-Nerve fiber degeneration, grade 1
MAMMARY GLAND:
-Adipose tissue only
OPTIC NERVES:
Only one of paired organs examined/present

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SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 22

ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: R1	
DAYS ON TEST	: 92
* ANIMAL NO.	: 23

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

HEART:
-lymphoid Cell infiltration, grade 1
LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Hyaline droplets, bilateral, grade 1
-Tubular basophilia, focal, unilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
LUNGS:
-Vascular mineralization, focal, grade 1
THYMUS:
-Epithelial Cyst

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RCC STUDY NUMBER A29553 REPORT
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TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 23

MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
ADRENAL CORTICES:
-Fatty change, bilateral, grade 1
MAMMARY GLAND:
-Adipose tissue only
HARDERIAN GLANDS:
-Porphyrin deposits, unilateral, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: R1	
DAYS ON TEST	: 92
* ANIMAL NO.	: 24

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Hematopoiesis, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1

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TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 24

PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
COLON:
-Luminal dilation, grade 1
LUNGS:
-Vascular mineralization, focal, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
PARATHYROID GLANDS:
Tissue not present for histologic examination
ADRENAL CORTICES:
-Fatty change, bilateral, grade 1
MAMMARY GLAND:
-Adipose tissue only
HARDERIAN GLANDS:
-Porphyrin deposits, unilateral, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: R1		
DAYS ON TEST	:	92
		* ANIMAL NO. : 25

* NECROPSY FINDINGS

KIDNEYS:
01: RIGHT SIDE: PELVIC DILATION.
NO OTHER NECROPSY OBSERVATIONS NOTED

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TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 25

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Hematopoiesis, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Hyaline droplets, bilateral, grade 1
-Pelvic dilation, bilateral, grade 1
This finding corresponds to necropsy observation no: 01.
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
COLON:
-Luminal dilation, grade 1
RECTUM:
-Luminal dilation, grade 1
LUNGS:
-Vascular mineralization, multifocal, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
THYROID GLAND (BOTH LOBES):
Only one of paired organs examined/present
PARATHYROID GLANDS:
Tissue not present for histologic examination
ADRENAL CORTICES:
-Fatty change, bilateral, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	MALE

* STATE AT NECROPSY: R1
DAYS ON TEST : 92 * ANIMAL NO. : 26
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Hyaline droplets, bilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
LUNGS:
-Vascular mineralization, focal, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Only one of paired organs examined/present
ADRENAL CORTICES:
-Fatty change, bilateral, grade 1
HARDERIAN GLANDS:
-Porphyrin deposits, unilateral, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	171/ 343
INDIVIDUAL ANIMAL DATA	RCC	:	A29553

<i>TEST ARTICLE</i>	:	ULTRAZINE FG-R	<i>PATHOL. NO.:</i>	11023 ROL
<i>TEST SYSTEM</i>	:	RAT, 13-Week, Oral	<i>DATE</i>	: 14-FEB-07
<i>SPONSOR</i>	:	DSM Nutritional Products AG	<i>PathData®System</i>	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS		
DOSE GROUP	:	01, 0 MG/KG/DAY
		MALE

* STATE AT NECROPSY: R1
DAYS ON TEST : 92 * ANIMAL NO. : 27
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1
LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
KIDNEYS:
-Hyaline droplets, bilateral, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
LUNGS:
-Vascular mineralization, focal, grade 1
THYMUS:
-Epithelial Cyst
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Tissue not present for histologic examination
ADRENAL CORTICES:
-Fatty change, bilateral, grade 2
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	172/ 343
INDIVIDUAL ANIMAL DATA	RCC	:	A29553

TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	MALE

* STATE AT NECROPSY: R1
DAYS ON TEST : 92 * ANIMAL NO. : 28
.....

* NECROPSY FINDINGS

EYES:
01: RIGHT SIDE: DISCOLORATION, GRAY WHITE.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

HEART:
-lymphoid Cell infiltration, grade 1
TRACHEA:
-Glandular ectasia, grade 1
LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Hematopoiesis, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Hyaline droplets, bilateral, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
ADRENAL CORTICES:
-Fatty change, unilateral, grade 1
SCIATIC NERVE, LEFT:
-Nerve fiber degeneration, grade 1
EYES:
-Lens degeneration, bilateral, grade 1
This finding corresponds to necropsy observation no: 01.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT
INDIVIDUAL ANIMAL DATA

PAGE : 173/ 343
RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R
TEST SYSTEM : RAT, 13-Week, Oral
SPONSOR : DSM Nutritional Products AG

PATHOL. NO.: 11023 ROL
DATE : 14-FEB-07
PathData®System V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS
DOSE GROUP : 01. 0 MG/KG/DAY

MALE

CONT./FF. ANIMAL NO. : 28

OPTIC NERVES:

Only one of paired organs examined/present
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: R1

DAYS ON TEST : 92

* ANIMAL NO. : 29

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:

- Lymphoid cell infiltration, focal, grade 1
- Fatty change, grade 1

MESENTERIC LYMPH NODE:

-Lymphoid hyperplasia, grade 1

PEYER'S PATCHES (JEJUNUM):

-Lymphoid Hyperplasia, grade 1

PEYER'S PATCHES (ILEUM) :

-Lymphoid Hyperplasia, grade 1

LUNGS :

-Vascular mineralization, focal, grade 1

MANDIBULAR LYMPH NODES:

Only one of paired organs examined/present

-Lymphoid Hyperplasia, unilateral, grade 1

PARATHYROID GLANDS:

Only one of paired organs examined/present

HARDERIAN GLANDS:

-Porphyry deposits, unilateral, grade 1

-Inflammation, focal, chronic, unilateral, grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	174/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 29

PITUITARY GLAND:
-Cyst, single, pars distalis
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: R1	
DAYS ON TEST	: 92
* ANIMAL NO.	: 30

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Hyaline droplets, bilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
LUNGS:
-Vascular mineralization, focal, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Only one of paired organs examined/present

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	175/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 30

.....

ADRENAL CORTICES:
-Fatty change, bilateral, grade 1
MAMMARY GLAND:
-Adipose tissue only
HARDERIAN GLANDS:
-Porphyrin deposits, bilateral, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
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SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	FEMALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 93 * ANIMAL NO. : 125
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1
LIVER:
-Lymphoid cell infiltration, focal, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
THYMUS:
-Epithelial Cyst
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
PARATHYROID GLANDS:
Only one of paired organs examined/present
HARDERIAN GLANDS:
-Porphyrin deposits, bilateral, grade 1
UTERUS:
-Metestrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY FEMALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 93 * ANIMAL NO. : 126
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
RECTUM:
-Luminal dilation, grade 1
THYMUS:
-Epithelial Cyst
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
PARATHYROID GLANDS:
Only one of paired organs examined/present
ADRENAL MEDULLAS:
Only one of paired organs examined/present
OPTIC NERVES:
Only one of paired organs examined/present
HARDERIAN GLANDS:
-Porphyrin deposits, bilateral, grade 1
UTERUS:
-Metestrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY FEMALE

* STATE AT NECROPSY: KO
DAYS ON TEST : 93 * ANIMAL NO. : 127
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1
LIVER:
-Lymphoid cell infiltration, focal, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
-Mineralization, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
THYROID GLAND (BOTH LOBES):
-Thymic ectopia, focal, unilateral
HARDERIAN GLANDS:
-Porphyrin deposits, unilateral, grade 1
UTERUS:
-Metestrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	FEMALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 93 * ANIMAL NO. : 128
.....

* NECROPSY FINDINGS

THYMUS:
01: FOCUS/FOCI, SEVERAL, D=1 MM, DARK RED.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
THYMUS:
Nothing abnormal discovered corresponding to necropsy observation no.01.
OVARIES:
-Stromal cell hyperplasia, focal, unilateral, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Tissue not present for histologic examination
OPTIC NERVES:
Only one of paired organs examined/present
UTERUS:
-Estrus phase of the estrous cycle
ZYMBALE'S GLANDS:
Only one of paired organs examined/present
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	180/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	FEMALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 93 * ANIMAL NO. : 129
.....

* NECROPSY FINDINGS

STOMACH:
01: FUNDUS, MUCOSA: FOCUS/FOCI, ISOLATED, D=2 MM, DARK RED.
THYMUS:
01: DISCOLORATION, DARK RED.
OVARIES:
01: BOTH SIDES: DISCOLORATION, DARK RED.
MANDIBULAR LYMPH NODES:
01: DISCOLORATION, REDDISH.
UTERUS:
01: BOTH HORNS: DISCOLORATION, DARK RED.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Hematopoiesis, focal, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Mineralization, focal, unilateral, grade 1
STOMACH:
-Congestion, focal
This finding corresponds to necropsy observation no: 01.
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
THYMUS:
-Epithelial Cyst
-Congestion, diffuse

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	181/ 343
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<i>TEST ARTICLE</i>	: ULTRAZINE FG-R	<i>PATHOL. NO.:</i>	11023 ROL
<i>TEST SYSTEM</i>	: RAT, 13-Week, Oral	<i>DATE</i>	: 14-FEB-07
<i>SPONSOR</i>	: DSM Nutritional Products AG	<i>PathData®System</i>	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS		
DOSE GROUP	: 01, 0 MG/KG/DAY	FEMALE

CONT./FF. ANIMAL NO. : 129

.....

This finding corresponds to necropsy observation no: 01.

OVARIES:

- Stromal cell hyperplasia, focal, unilateral, grade 1
- Congestion, multifocal, bilateral

This finding corresponds to necropsy observation no: 01.

MANDIBULAR LYMPH NODES:

- Only one of paired organs examined/present
- Congestion, diffuse, unilateral

This finding corresponds to necropsy observation no: 01.

PARATHYROID GLANDS:

- Only one of paired organs examined/present

ADRENAL CORTICES:

- Fatty change, bilateral, grade 1

SCIATIC NERVE, LEFT:

- Nerve fiber degeneration, grade 1

UTERUS:

- Proestrus phase of the estrous cycle
- Congestion, multifocal

This finding corresponds to necropsy observation no: 01.

ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0		
DAYS ON TEST	: 93	* ANIMAL NO. : 130

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	182/ 343
INDIVIDUAL ANIMAL DATA	RCC	:	A29553

TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY FEMALE

CONT./FF. ANIMAL NO. : 130

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
THYMUS:
-Epithelial Cyst
OVARIES:
-Stromal cell hyperplasia, bilateral, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, diffuse, unilateral, grade 1
PARATHYROID GLANDS:
Tissue not present for histologic examination
UTERUS:
-Estrus phase of the estrous cycle
ZYMBAL'S GLANDS:
Only one of paired organs examined/present
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	183/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY FEMALE

* STATE AT NECROPSY: KO
DAYS ON TEST : 93 * ANIMAL NO. : 131
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Mineralization, focal, unilateral, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
LUNGS:
-Vascular mineralization, focal, grade 1
THYMUS:
-Epithelial Cyst
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Tissue not present for histologic examination
UTERUS:
-Estrus phase of the estrous cycle
BRONCHIAL LYMPH NODE:
-Lymphoid hyperplasia, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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<i>TEST SYSTEM</i>	:	RAT, 13-Week, Oral	<i>DATE</i>	: 14-FEB-07
<i>SPONSOR</i>	:	DSM Nutritional Products AG	<i>PathData®System</i>	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	FEMALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 93 * ANIMAL NO. : 132
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1
LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
-Mineralization, grade 1
THYMUS:
-Epithelial Cyst
-Atrophy, focal, grade 1
OVARIES:
-Stromal cell hyperplasia, focal, unilateral, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
THYROID GLAND (BOTH LOBES):
-Thymic ectopia, focal, unilateral
UTERUS:
-Metestrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	185/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	FEMALE

* STATE AT NECROPSY: KO
DAYS ON TEST : 93 * ANIMAL NO. : 133
.....

* NECROPSY FINDINGS

OVARIES:
01: BOTH SIDES: DISCOLORATION, DARK RED.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Hematopoiesis, focal, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
THYMUS:
-Epithelial Cyst, single
OVARIES:
-Stromal cell hyperplasia, focal, unilateral, grade 1
-Congestion, bilateral
This finding corresponds to necropsy observation no: 01.
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
PARATHYROID GLANDS:
Tissue not present for histologic examination
SCIATIC NERVE, LEFT:
-Nerve fiber degeneration, grade 1
HARDERIAN GLANDS:
-Inflammation, focal, chronic, unilateral, grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY FEMALE

CONT./FF. ANIMAL NO. : 133

UTERUS:
-Metestrus phase of the estrous cycle
ZYMBA'S GLANDS:
Only one of paired organs examined/present
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0	
DAYS ON TEST	: 93 * ANIMAL NO. : 134

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1
LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Hematopoiesis, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
THYMUS:
-Epithelial Cyst

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY FEMALE

CONT./FF. ANIMAL NO. : 134

MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
ADRENAL CORTICES:
-Fatty change, bilateral, grade 1
HARDERIAN GLANDS:
-Porphyrin deposits, bilateral, grade 1
UTERUS:
-Estrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0	
DAYS ON TEST	: 94 * ANIMAL NO. : 135

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1
LIVER:
-Lymphoid cell infiltration, focal, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
KIDNEYS:
-Tubular basophilia, unilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY FEMALE

CONT./FF. ANIMAL NO. : 135

THYMUS:
-Epithelial Cyst
OVARIES:
-Stromal cell hyperplasia, focal, bilateral, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Tissue not present for histologic examination
HARDERIAN GLANDS:
-Porphyrin deposits, unilateral, grade 1
UTERUS:
-Estrus phase of the estrous cycle
PAROTID GLANDS:
-Inflammation, focal, chronic, unilateral, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0		* ANIMAL NO. :	136
DAYS ON TEST	: 94		

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1
LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
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SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	FEMALE

CONT./FF. ANIMAL NO. : 136

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SPLEEN:
-Increased hemopoiesis, grade 1
KIDNEYS:
-Mineralization, focal, unilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
COLON:
-Luminal dilation, grade 1
OVARIES:
-Stromal cell hyperplasia, focal, bilateral, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Tissue not present for histologic examination
ADRENAL CORTICES:
-Fatty change, unilateral, grade 1
HARDERIAN GLANDS:
-Porphyrin deposits, unilateral, grade 1
UTERUS:
-Diestrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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<i>SPONSOR</i>	:	DSM Nutritional Products AG	<i>PathData®System</i>	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	FEMALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 94 * ANIMAL NO. : 137
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, focal, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
THYMUS:
-Epithelial Cyst
OVARIES:
-Stromal cell hyperplasia, focal, bilateral, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Tissue not present for histologic examination
UTERUS:
-Diestrus phase of the estrous cycle
ZYMBA'S GLANDS:
Tissue not present for histologic examination
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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<i>SPONSOR</i>	:	DSM Nutritional Products AG	<i>PathData®System</i>	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	FEMALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 94 * ANIMAL NO. : 138
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Mineralization, focal, unilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
-Mineralization, grade 1
THYMUS:
-Epithelial Cyst
OVARIES:
-Stromal cell hyperplasia, focal, bilateral, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Only one of paired organs examined/present
SKELETAL MUSCLE:
-Lymphoid cell infiltration, focal, grade 1
UTERUS:
-Estrus phase of the estrous cycle

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SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY FEMALE

CONT./FF. ANIMAL NO. : 138

PAROTID GLANDS:
Only one of paired organs examined/present
ZYMBAL'S GLANDS:
Only one of paired organs examined/present
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0	
DAYS ON TEST	: 94 * ANIMAL NO. : 139

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 3
KIDNEYS:
-Mineralization, focal, unilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
THYMUS:
-Epithelial Cyst
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1

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SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	FEMALE

CONT./FF. ANIMAL NO. : 139

PARATHYROID GLANDS:
Only one of paired organs examined/present
HARDERIAN GLANDS:
-Porphyrin deposits, bilateral, grade 1
UTERUS:
-Diestrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0	
DAYS ON TEST	: 94
* ANIMAL NO.	: 140

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1
LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY FEMALE

CONT./FF. ANIMAL NO. : 140

LUNGS:
-Vascular mineralization, focal, grade 1
THYMUS:
-Epithelial Cyst
OVARIES:
-Stromal cell hyperplasia, focal, bilateral, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
PARATHYROID GLANDS:
Only one of paired organs examined/present
UTERUS:
-Metestrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0		
DAYS ON TEST	:	94 * ANIMAL NO. : 141

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
DUODENUM:
-Inflammation, focal, chronic, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY FEMALE

CONT./FF. ANIMAL NO. : 141

PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
LUNGS:
-Vascular mineralization, focal, grade 1
THYMUS:
-Epithelial Cyst
OVARIES:
-Stromal cell hyperplasia, bilateral, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Only one of paired organs examined/present
UTERUS:
-Estrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0	
DAYS ON TEST	: 94 * ANIMAL NO. : 142

* NECROPSY FINDINGS

OVARIES:
01: RIGHT SIDE: DISCOLORATION, DARK RED.
NO OTHER NECROPSY OBSERVATIONS NOTED

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ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	FEMALE

CONT./FF. ANIMAL NO. : 142

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1
LIVER:
-Lymphoid cell infiltration, focal, grade 1
KIDNEYS:
-Mineralization, focal, unilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
THYMUS:
-Epithelial Cyst
OVARIES:
-Stromal cell hyperplasia, focal, bilateral, grade 1
-Congestion, bilateral
This finding corresponds to necropsy observation no: 01.
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
THYROID GLAND (BOTH LOBES):
-Thymic ectopia, focal, unilateral
PARATHYROID GLANDS:
Only one of paired organs examined/present
SCIATIC NERVE, LEFT:
-Nerve fiber degeneration, grade 1
OPTIC NERVES:
Only one of paired organs examined/present
UTERUS:
-Diestrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	FEMALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 94 * ANIMAL NO. : 143
.....

* NECROPSY FINDINGS

THYMUS:
01: FOCUS/FOCI, SEVERAL, D=1 MM, DARK RED.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
THYMUS:
-Epithelial Cyst
-Hemorrhage, multifocal, grade 1
This finding corresponds to necropsy observation no: 01.
SUBLINGUAL GLANDS:
Only one of paired organs examined/present
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
OPTIC NERVES:
Only one of paired organs examined/present
SKELETAL MUSCLE:
-Lymphoid cell infiltration, focal, grade 1
UTERUS:
-Estrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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<i>SPONSOR</i>	:	DSM Nutritional Products AG	<i>PathData®System</i>	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	FEMALE

* STATE AT NECROPSY: KO
DAYS ON TEST : 94 * ANIMAL NO. : 144
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
THYMUS:
-Epithelial Cyst
OVARIES:
-Stromal cell hyperplasia, bilateral, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Tissue not present for histologic examination
UTERUS:
-Metestrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP : 01, 0 MG/KG/DAY	FEMALE

* STATE AT NECROPSY: R1
DAYS ON TEST : 92 * ANIMAL NO. : 145
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
THYMUS:
-Epithelial Cyst
OVARIES:
-Stromal cell hyperplasia, focal, bilateral, grade 1
MANDIBULAR (SUBMANDIBULAR/SUBMAXILLARY) GLANDS:
Only one of paired organs examined/present
SUBLINGUAL GLANDS:
Only one of paired organs examined/present
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
PARATHYROID GLANDS:
Only one of paired organs examined/present
UTERUS:
-Diestrus phase of the estrous cycle
PITUITARY GLAND:
-Cyst, single, pars distalis
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	FEMALE

* STATE AT NECROPSY: R1
DAYS ON TEST : 92 * ANIMAL NO. : 146
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
THYMUS:
-Epithelial Cyst
OVARIES:
-Stromal cell hyperplasia, focal, bilateral, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
HARDERIAN GLANDS:
-Porphyrin deposits, bilateral, grade 1
UTERUS:
-Proestrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY FEMALE

* STATE AT NECROPSY: R1
DAYS ON TEST : 92 * ANIMAL NO. : 147
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1
LIVER:
-Lymphoid cell infiltration, grade 1
-Hematopoiesis, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 2
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
COLON:
-Luminal dilation, grade 1
THYMUS:
-Epithelial Cyst
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
ADRENAL CORTICES:
-Fatty change, unilateral, grade 1
HARDERIAN GLANDS:
-Inflammation, focal, chronic, unilateral, grade 1
UTERUS:
-Proestrus phase of the estrous cycle
PAROTID GLANDS:
-Inflammation, focal, chronic, unilateral, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP : 01, 0 MG/KG/DAY	FEMALE

* STATE AT NECROPSY: R1
DAYS ON TEST : 92 * ANIMAL NO. : 148
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Mineralization, focal, bilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
LUNGS:
-Vascular mineralization, focal, grade 1
THYMUS:
-Epithelial Cyst
SUBLINGUAL GLANDS:
Only one of paired organs examined/present
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
EYES:
Only one of paired organs examined/present
OPTIC NERVES:
Only one of paired organs examined/present
HARDERIAN GLANDS:
-Porphyrin deposits, unilateral, grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	203/ 343
INDIVIDUAL ANIMAL DATA	RCC	:	A29553

TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	FEMALE

CONT./FF. ANIMAL NO. : 148

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UTERUS:
-Metestrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: R1	
DAYS ON TEST	: 92
* ANIMAL NO.	: 149

.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, grade 1
-Hematopoiesis, focal, grade 1
-Fatty change, grade 1

SPLEEN:
-Increased hemopoiesis, grade 1

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1

PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1

THYMUS:
-Epithelial Cyst

MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1

PARATHYROID GLANDS:
Only one of paired organs examined/present

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	: 204/ 343
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TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP : 01, 0 MG/KG/DAY	FEMALE

CONT./FF. ANIMAL NO. : 149

HARDERIAN GLANDS:
-Inflammation, focal, chronic, bilateral, grade 1
UTERUS:
-Metestrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: R1	
DAYS ON TEST : 92	* ANIMAL NO. : 150

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1
LIVER:
-Lymphoid cell infiltration, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
THYMUS:
-Epithelial Cyst
OVARIES:
-Stromal cell hyperplasia, focal, bilateral, grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	205/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	FEMALE

CONT./FF. ANIMAL NO. : 150

MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Only one of paired organs examined/present
UTERUS:
-Diestrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: R1	
DAYS ON TEST	: 92
	* ANIMAL NO. : 151

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1
LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Hematopoiesis, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY FEMALE

CONT./FF. ANIMAL NO. : 151

PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
SUBLINGUAL GLANDS:
Only one of paired organs examined/present
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
ADRENAL CORTICES:
-Fatty change, unilateral, grade 1
HARDERIAN GLANDS:
-Porphyrin deposits, bilateral, grade 1
UTERUS:
-Proestrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: R1	
DAYS ON TEST	: 92 * ANIMAL NO. : 152

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, grade 1
-Hematopoiesis, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	207/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP : 01, 0 MG/KG/DAY	FEMALE

CONT./FF. ANIMAL NO. : 152

KIDNEYS:
-Mineralization, focal, unilateral, grade 1
STOMACH:
-Glandular dilation, focal, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
LUNGS:
-Vascular mineralization, focal, grade 1
THYMUS:
-Epithelial Cyst
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Only one of paired organs examined/present
UTERUS:
-Metestrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: R1	
DAYS ON TEST : 92	* ANIMAL NO. : 153

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	208/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	FEMALE

CONT./FF. ANIMAL NO. : 153

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Hematopoiesis, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Sinusoidal ectasia, focal, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
LUNGS:
-Vascular mineralization, focal, grade 1
THYMUS:
-Epithelial Cyst
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Tissue not present for histologic examination
SCIATIC NERVE, LEFT:
-Nerve fiber degeneration, grade 1
HARDERIAN GLANDS:
-Porphyrin deposits, unilateral, grade 1
UTERUS:
-Metestrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP : 01, 0 MG/KG/DAY	FEMALE

* STATE AT NECROPSY: R1
DAYS ON TEST : 92 * ANIMAL NO. : 154
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1
LIVER:
-Lymphoid cell infiltration, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Mineralization, focal, bilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
LUNGS:
-Vascular mineralization, focal, grade 1
THYMUS:
-Epithelial Cyst
OVARIES:
-Stromal cell hyperplasia, focal, bilateral, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
THYROID GLAND (BOTH LOBES):
-Thymic ectopia, focal, unilateral
PARATHYROID GLANDS:
Only one of paired organs examined/present

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	210/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 01, 0 MG/KG/DAY
	FEMALE

CONT./FF. ANIMAL NO. : 154

.....

ADRENAL CORTICES:
-Fatty change, unilateral, grade 1
HARDERIAN GLANDS:
-Porphyrin deposits, unilateral, grade 1
UTERUS:
-Proestrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

**PATHOLOGY REPORT
INDIVIDUAL ANIMAL DATA**

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RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R
TEST SYSTEM : RAT, 13-Week, Oral
SPONSOR : DSM Nutritional Products AG
PATHOL. NO.: 11023 ROL
DATE : 14-FEB-07
PathData®System V6.2b5

ANIMAL HEADING DATA
DOSE GROUP : 02, 500 MG/KG/DAY

ANIMAL NUMBER	SEX M/F	DEFINED AND FINAL STATE OF NECROPSY	TEST DAYS	FIRST AND LAST DAY UNDER TEST	DATE OF NECROPSY
37	M	K0	K0	92	02-JAN-06 03-APR-06 04-APR-06
38	M	K0	K0	92	02-JAN-06 03-APR-06 04-APR-06
39	M	K0	K0	92	02-JAN-06 03-APR-06 04-APR-06
40	M	K0	K0	92	02-JAN-06 03-APR-06 04-APR-06
41	M	K0	K0	92	02-JAN-06 03-APR-06 04-APR-06
42	M	K0	K0	92	02-JAN-06 03-APR-06 04-APR-06
43	M	K0	K0	92	02-JAN-06 03-APR-06 04-APR-06
44	M	K0	+2	32	02-JAN-06 02-FEB-06 02-FEB-06
45	M	K0	K0	92	02-JAN-06 03-APR-06 04-APR-06
46	M	K0	K0	92	02-JAN-06 03-APR-06 04-APR-06
47	M	K0	K0	95	02-JAN-06 06-APR-06 07-APR-06
48	M	K0	K0	95	02-JAN-06 06-APR-06 07-APR-06
49	M	K0	K0	95	02-JAN-06 06-APR-06 07-APR-06
50	M	K0	K0	95	02-JAN-06 06-APR-06 07-APR-06
51	M	K0	K0	95	02-JAN-06 06-APR-06 07-APR-06
52	M	K0	K0	95	02-JAN-06 06-APR-06 07-APR-06
53	M	K0	K0	95	02-JAN-06 06-APR-06 07-APR-06
54	M	K0	K0	95	02-JAN-06 06-APR-06 07-APR-06
55	M	K0	K0	95	02-JAN-06 06-APR-06 07-APR-06
56	M	K0	K0	95	02-JAN-06 06-APR-06 07-APR-06
161	F	K0	K0	93	02-JAN-06 04-APR-06 05-APR-06
162	F	K0	K0	93	02-JAN-06 04-APR-06 05-APR-06
163	F	K0	K0	93	02-JAN-06 04-APR-06 05-APR-06
164	F	K0	K0	93	02-JAN-06 04-APR-06 05-APR-06
165	F	K0	K0	93	02-JAN-06 04-APR-06 05-APR-06
166	F	K0	K0	93	02-JAN-06 04-APR-06 05-APR-06
167	F	K0	K0	93	02-JAN-06 04-APR-06 05-APR-06
168	F	K0	K0	93	02-JAN-06 04-APR-06 05-APR-06
169	F	K0	K0	93	02-JAN-06 04-APR-06 05-APR-06
170	F	K0	K0	93	02-JAN-06 04-APR-06 05-APR-06
171	F	K0	K0	94	02-JAN-06 05-APR-06 06-APR-06
172	F	K0	K0	94	02-JAN-06 05-APR-06 06-APR-06
173	F	K0	K0	94	02-JAN-06 05-APR-06 06-APR-06
174	F	K0	K0	94	02-JAN-06 05-APR-06 06-APR-06
175	F	K0	K0	94	02-JAN-06 05-APR-06 06-APR-06
176	F	K0	K0	94	02-JAN-06 05-APR-06 06-APR-06
177	F	K0	K0	94	02-JAN-06 05-APR-06 06-APR-06
178	F	K0	K0	94	02-JAN-06 05-APR-06 06-APR-06
179	F	K0	K0	94	02-JAN-06 05-APR-06 06-APR-06
180	F	K0	K0	94	02-JAN-06 05-APR-06 06-APR-06

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 02, 500 MG/KG/DAY
	MALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 92 * ANIMAL NO. : 37
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0
DAYS ON TEST : 92 * ANIMAL NO. : 38
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Hyaline droplets, proximal convoluted tubules, bilateral,
grade 1
-Tubular basophilia, focal, unilateral, grade 1
RECTUM:
Organ examined, no pathologic findings noted

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	213/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 02, 500 MG/KG/DAY
	MALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 92 * ANIMAL NO. : 39
.....

* NECROPSY FINDINGS

KIDNEYS:
01: RIGHT SIDE: REDUCED IN SIZE, D=15X8 MM.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
Nothing abnormal discovered corresponding to necropsy obser-
vation no.01.
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0
DAYS ON TEST : 92 * ANIMAL NO. : 40
.....

* NECROPSY FINDINGS

THYMUS:
01: FOCUS/FOCI, SEVERAL, D=1 MM, DARK RED.
NO OTHER NECROPSY OBSERVATIONS NOTED

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP : 02, 500 MG/KG/DAY	MALE

CONT./FF. ANIMAL NO. : 40

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Hyaline droplets, proximal convoluted tubules, bilateral,
grade 1
-Lymphoid infiltration, focal, unilateral, grade 1
RECTUM:
Organ examined, no pathologic findings noted
THYMUS:
-Epithelial Cyst
-Hemorrhage, multifocal, grade 1
This finding corresponds to necropsy observation no: 01.

* STATE AT NECROPSY: K0		
DAYS ON TEST : 92	* ANIMAL NO. :	41

* NECROPSY FINDINGS

KIDNEYS:
01: RIGHT SIDE: PELVIC DILATION.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, focal, grade 1
KIDNEYS:
-Hyaline droplets, proximal convoluted tubules, bilateral,
grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 02, 500 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 41

-Pelvic dilation, unilateral, grade 1
This finding corresponds to necropsy observation no: 01.
RECTUM:
Organ examined, no pathologic findings noted

* STATE AT NECROPSY: K0	
DAYS ON TEST	: 92
* ANIMAL NO. :	42

* NECROPSY FINDINGS

THYMUS:
01: FOCUS/FOCI, SEVERAL, D=1 MM, DARK RED.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 2
KIDNEYS:
-Hyaline droplets, proximal convoluted tubules, bilateral,
grade 1
RECTUM:
-Luminal dilation, grade 4
THYMUS:
-Epithelial Cyst
-Hemorrhage, multifocal, grade 1
This finding corresponds to necropsy observation no: 01.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 02, 500 MG/KG/DAY
	MALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 92 * ANIMAL NO. : 43
.....

* NECROPSY FINDINGS

LYMPH NODES:
01: ILIAC, RIGHT SIDE: CYST(S), D=6 MM, WATERY-CLEAR.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Hyaline droplets, proximal convoluted tubules, bilateral,
grade 1
RECTUM:
Organ examined, no pathologic findings noted
LYMPH NODES:
-Cowper's glands, bilateral
This finding corresponds to necropsy observation no: 01.

* STATE AT NECROPSY: K0/+2
DAYS ON TEST : 32 * ANIMAL NO. : 44
.....

* NECROPSY FINDINGS

KIDNEYS:
01: BOTH SIDES: ENLARGED, D=30X26 MM.
02: BOTH SIDES: GRANULATED SURFACE, TAN.
DUODENUM:
01: CONTENTS BLACK-BROWN.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 02, 500 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 44

JEJUNUM:
01: CONTENTS BLACK-BROWN.
ILEUM:
01: CONTENTS BLACK-BROWN.
02: INTUSSUSCEPTION, L=15 MM.
PANCREAS:
01: DISCOLORATION, GRAY WHITE.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

HEART:
-lymphoid Cell infiltration, lympho-histiocytic., grade 3
-Fibrosis, focal, grade 1
SPLEEN:
-Lymphoid depletion, grade 2
-Fibrosis, red pulp, diffuse, grade 2
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Polycystic kidney, bilateral, grade 4
This finding corresponds to necropsy observations nos: 01,02.
-Pelvic dilation, bilateral, grade 2
STOMACH:
-Forestomach Erosion, multifocal, grade 4
-Submucosal edema, grade 4
DUODENUM:
Nothing abnormal discovered corresponding to necropsy obser-
vation no.01.
JEJUNUM:
Nothing abnormal discovered corresponding to necropsy obser-
vation no.01.
PEYER'S PATCHES (JEJUNUM):
-Lymphoid depletion, grade 3

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	218/ 343
INDIVIDUAL ANIMAL DATA	RCC	:	A29553

TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 02, 500 MG/KG/DAY MALE

CONT./FF. ANIMAL NO. : 44

ILEUM:

Nothing abnormal discovered corresponding to necropsy observation no.01.

-Intussusception, agonal

This finding corresponds to necropsy observation no: 02.

PEYER'S PATCHES (ILEUM):

-Lymphoid depletion, grade 1

LUNGS:

-Osseous metaplasia, focal, grade 1

-Subpleural lymphoid infiltration, grade 1

THYMUS:

-Atrophy, diffuse, grade 3

TESTES:

-Sertoli cell vacuolation, bilateral, grade 1

-Tubular atrophy, multifocal, bilateral, grade 1

EPIDIDYMIDES:

-Intratubular cellular debris, multifocal, bilateral, grade 2

-Oligospermia, bilateral, grade 3

SUBLINGUAL GLANDS:

-Apoptosis, bilateral, grade 2

PANCREAS:

Nothing abnormal discovered corresponding to necropsy observation no.01.

MANDIBULAR LYMPH NODES:

Only one of paired organs examined/present

PARATHYROID GLANDS:

-Diffuse Hyperplasia, bilateral, grade 3

ADRENAL CORTICES:

-Diffuse hypertrophy, bilateral, grade 1

SCIATIC NERVE, LEFT:

-Nerve fiber degeneration, grade 1

EYES:

-Retinal rosette formation, malformation, bilateral, grade 2

SEMINAL VESICLES:

-Apoptosis, bilateral, grade 2

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RCC STUDY NUMBER A29553 REPORT
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PATHOLOGY REPORT	PAGE	:	219/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
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SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 02, 500 MG/KG/DAY MALE

CONT./FF. ANIMAL NO. : 44

BONE MARROW (STERNUM):
-Fatty replacement, grade 3
BONE (FEMUR):
-Osteodyst. fibrosa, grade 2
-Bone marrow, hypocellularity, grade 3
BRONCHIAL LYMPH NODE:
-Lymphoid depletion, grade 1
PAROTID GLANDS:
-Ductular ectasia, focal, bilateral, grade 2
-Atrophy, bilateral, grade 2
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0	
DAYS ON TEST	: 92 * ANIMAL NO. : 45

* NECROPSY FINDINGS

STOMACH:
01: FUNDUS, MUCOSA: FOCUS/FOCI, ISOLATED, D=2 MM, REDDISH.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Hyaline droplets, proximal convoluted tubules, bilateral,
grade 1
STOMACH:
-Congestion, focal
This finding corresponds to necropsy observation no: 01.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 02, 500 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 45

RECTUM:
Organ examined, no pathologic findings noted

* STATE AT NECROPSY: K0	
DAYS ON TEST : 92	* ANIMAL NO. : 46

* NECROPSY FINDINGS

KIDNEYS:
01: LEFT SIDE: PELVIC DILATION.
SEMINAL VESICLES:
01: BOTH SIDES: FOCUS/FOCI, ISOLATED, D=1 MM, DARK RED.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Hyaline droplets, proximal convoluted tubules, bilateral,
grade 1
-Pelvic dilation, unilateral, grade 1
This finding corresponds to necropsy observation no: 01.
RECTUM:
-Luminal dilation, grade 3
SEMINAL VESICLES:
-Congestion, multifocal, bilateral
This finding corresponds to necropsy observation no: 01.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP : 02, 500 MG/KG/DAY	MALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 95 * ANIMAL NO. : 47
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 2
KIDNEYS:
-Hyaline droplets, proximal convoluted tubules, bilateral,
grade 1
RECTUM:
Organ examined, no pathologic findings noted

* STATE AT NECROPSY: K0
DAYS ON TEST : 95 * ANIMAL NO. : 48
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 2
-Foamy histiocytes, focal, grade 1
KIDNEYS:
-Hyaline droplets, proximal convoluted tubules, bilateral,
grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 02, 500 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 48

RECTUM:
Organ examined, no pathologic findings noted

* STATE AT NECROPSY: K0	
DAYS ON TEST : 95	* ANIMAL NO. : 49

* NECROPSY FINDINGS

THYMUS:
01: FOCUS/FOCI, SEVERAL, D=1 MM, DARK RED.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Hyaline droplets, proximal convoluted tubules, bilateral,
grade 1
RECTUM:
Organ examined, no pathologic findings noted
THYMUS:
-Congestion, multifocal
This finding corresponds to necropsy observation no: 01.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	: 223/ 343
INDIVIDUAL ANIMAL DATA	RCC	: A29553

TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 02, 500 MG/KG/DAY
	MALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 95 * ANIMAL NO. : 50
.....

* NECROPSY FINDINGS

THYMUS:
01: FOCUS/FOCI, ISOLATED, D=1 MM, DARK RED.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, focal, grade 1
KIDNEYS:
-Tubular basophilia, focal, unilateral, grade 1
RECTUM:
Organ examined, no pathologic findings noted
THYMUS:
-Congestion, focal
This finding corresponds to necropsy observation no: 01.

* STATE AT NECROPSY: K0
DAYS ON TEST : 95 * ANIMAL NO. : 51
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 02, 500 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 51

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Hyaline droplets, proximal convoluted tubules, bilateral,
grade 1
RECTUM:
Organ examined, no pathologic findings noted

* STATE AT NECROPSY: K0	
DAYS ON TEST	: 95
* ANIMAL NO.	: 52

* NECROPSY FINDINGS

THYMUS:
01: FOCUS/FOCI, SEVERAL, D=1 MM, DARK RED.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Hyaline droplets, proximal convoluted tubules, bilateral,
grade 1
RECTUM:
Organ examined, no pathologic findings noted
THYMUS:
-Epithelial Cyst, multiple
-Hemorrhage, multifocal, grade 1
This finding corresponds to necropsy observation no: 01.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	225/ 343
INDIVIDUAL ANIMAL DATA	RCC	:	A29553

TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 02, 500 MG/KG/DAY
	MALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 95 * ANIMAL NO. : 53
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 2
KIDNEYS:
-Hyaline droplets, proximal convoluted tubules, bilateral,
grade 1
-Tubular basophilia, focal, unilateral, grade 1
RECTUM:
Organ examined, no pathologic findings noted

* STATE AT NECROPSY: K0
DAYS ON TEST : 95 * ANIMAL NO. : 54
.....

* NECROPSY FINDINGS

SKIN/SUBCUTIS:
01: TIP OF TAIL: DEJECTED.
NO OTHER NECROPSY OBSERVATIONS NOTED

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP : 02, 500 MG/KG/DAY	MALE

CONT./FF. ANIMAL NO. : 54

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Tubular basophilia, focal, unilateral, grade 1
RECTUM:
Organ examined, no pathologic findings noted
SKIN/SUBCUTIS:
-Tail, bone atrophy, grade 1
This finding corresponds to necropsy observation no: 01.

* STATE AT NECROPSY: K0	
DAYS ON TEST : 95	* ANIMAL NO. : 55

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, focal, grade 1
KIDNEYS:
-Hyaline droplets, proximal convoluted tubules, bilateral, grade 1
-Tubular basophilia, focal, unilateral, grade 1
RECTUM:
Organ examined, no pathologic findings noted

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	227/ 343
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<i>TEST SYSTEM</i>	:	RAT, 13-Week, Oral	<i>DATE</i>	: 14-FEB-07
<i>SPONSOR</i>	:	DSM Nutritional Products AG	<i>PathData®System</i>	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 02, 500 MG/KG/DAY
	MALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 95 * ANIMAL NO. : 56
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 2
KIDNEYS:
-Lymphoid infiltration, unilateral, grade 1
RECTUM:
Organ examined, no pathologic findings noted

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	: 228/ 343
INDIVIDUAL ANIMAL DATA	RCC	: A29553

TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP : 02, 500 MG/KG/DAY	FEMALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 93 * ANIMAL NO. : 161
.....

* NECROPSY FINDINGS

KIDNEYS:
01: RIGHT SIDE: PELVIC DILATION.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, focal, grade 1
KIDNEYS:
-Pelvic dilation, unilateral, grade 1
This finding corresponds to necropsy observation no: 01.
RECTUM:
Organ examined, no pathologic findings noted

* STATE AT NECROPSY: K0
DAYS ON TEST : 93 * ANIMAL NO. : 162
.....

* NECROPSY FINDINGS

KIDNEYS:
01: RIGHT SIDE: PELVIC DILATION.
NO OTHER NECROPSY OBSERVATIONS NOTED

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 02, 500 MG/KG/DAY
	FEMALE

CONT./FF. ANIMAL NO. : 162

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Pelvic dilation, unilateral, grade 1
This finding corresponds to necropsy observation no: 01.
-Transitional cell hyperplasia, focal, unilateral, grade 1
RECTUM:
Organ examined, no pathologic findings noted

* STATE AT NECROPSY: K0	
DAYS ON TEST	: 93
* ANIMAL NO.	: 163

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 2
-Foamy histiocytes, focal, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP : 02, 500 MG/KG/DAY	FEMALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 93 * ANIMAL NO. : 164
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Mineralization, focal, bilateral, grade 1
RECTUM:
Organ examined, no pathologic findings noted

* STATE AT NECROPSY: K0
DAYS ON TEST : 93 * ANIMAL NO. : 165
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 2
KIDNEYS:
-Mineralization, focal, unilateral, grade 1
RECTUM:
Organ examined, no pathologic findings noted

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	231/ 343
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<i>TEST ARTICLE</i>	: ULTRAZINE FG-R	<i>PATHOL. NO.:</i>	11023 ROL
<i>TEST SYSTEM</i>	: RAT, 13-Week, Oral	<i>DATE</i>	: 14-FEB-07
<i>SPONSOR</i>	: DSM Nutritional Products AG	<i>PathData®System</i>	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 02, 500 MG/KG/DAY FEMALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 93 * ANIMAL NO. : 166
.....

* NECROPSY FINDINGS

THYMUS:
01: FOCUS/FOCI, SEVERAL, D=1 MM, DARK RED.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Mineralization, focal, bilateral, grade 1
RECTUM:
Organ examined, no pathologic findings noted
THYMUS:
-Epithelial Cyst
-Hemorrhage, focal, grade 1
This finding corresponds to necropsy observation no: 01.

* STATE AT NECROPSY: K0
DAYS ON TEST : 93 * ANIMAL NO. : 167
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 02, 500 MG/KG/DAY FEMALE

CONT./FF. ANIMAL NO. : 167

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0	
DAYS ON TEST	: 93 * ANIMAL NO. : 168

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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<i>TEST SYSTEM</i>	: RAT, 13-Week, Oral	<i>DATE</i>	: 14-FEB-07
<i>SPONSOR</i>	: DSM Nutritional Products AG	<i>PathData®System</i>	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 02, 500 MG/KG/DAY FEMALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 93 * ANIMAL NO. : 169
.....

* NECROPSY FINDINGS

UTERUS:
01: BOTH HORNS: DISCOLORATION, REDDISH.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Mineralization, focal, unilateral, grade 1
RECTUM:
Organ examined, no pathologic findings noted
UTERUS:
-Congestion, focal
This finding corresponds to necropsy observation no: 01.

* STATE AT NECROPSY: K0
DAYS ON TEST : 93 * ANIMAL NO. : 170
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	: 234/ 343
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TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP : 02, 500 MG/KG/DAY	FEMALE

CONT./FF. ANIMAL NO. : 170

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Mineralization, focal, unilateral, grade 1
RECTUM:
-Luminal dilation, grade 2

* STATE AT NECROPSY: K0	
DAYS ON TEST : 94	* ANIMAL NO. : 171

* NECROPSY FINDINGS

THYMUS:
01: FOCUS/FOCI, ISOLATED, D=1 MM, DARK RED.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
Organ examined, no pathologic findings noted
RECTUM:
-Luminal dilation, grade 3
THYMUS:
-Epithelial Cyst, single
-Hemorrhage, grade 1
This finding corresponds to necropsy observation no: 01.
-Atrophy, grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP : 02, 500 MG/KG/DAY	FEMALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 94 * ANIMAL NO. : 172
.....

* NECROPSY FINDINGS

THYMUS:
01: DISCOLORATION, DARK RED.
MAMMARY GLAND:
01: LEFT SIDE: NODULE(S), D=35X25 MM, GRAY WHITE, FIRM.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
THYMUS:
-Hemorrhage, multifocal, grade 2
This finding corresponds to necropsy observation no: 01.
MAMMARY GLAND:
-Adenocarcinoma (malignant neoplasm)
This finding corresponds to necropsy observation no: 01.
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0
DAYS ON TEST : 94 * ANIMAL NO. : 173
.....

* NECROPSY FINDINGS

THYMUS:
01: FOCUS/FOCI, ISOLATED, D=1 MM, DARK RED.
NO OTHER NECROPSY OBSERVATIONS NOTED

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987

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	: 236/ 343
INDIVIDUAL ANIMAL DATA	RCC	: A29553

TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP : 02, 500 MG/KG/DAY	FEMALE

CONT./FF. ANIMAL NO. : 173

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, grade 1
KIDNEYS:
-Mineralization, focal, unilateral, grade 1
-Transitional cell hyperplasia, focal, unilateral, grade 1
RECTUM:
-Luminal dilation, grade 1
THYMUS:
-Epithelial Cyst, single
-Hemorrhage, focal, grade 1
This finding corresponds to necropsy observation no: 01.

* STATE AT NECROPSY: K0	
DAYS ON TEST : 94	* ANIMAL NO. : 174

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	237/ 343
INDIVIDUAL ANIMAL DATA	RCC	:	A29553

TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 02, 500 MG/KG/DAY
	FEMALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 94 * ANIMAL NO. : 175
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0
DAYS ON TEST : 94 * ANIMAL NO. : 176
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 2
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	238/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 02, 500 MG/KG/DAY FEMALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 94 * ANIMAL NO. : 177
.....

* NECROPSY FINDINGS

OVARIES:
01: RIGHT SIDE: DISCOLORATION, DARK RED.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
Organ examined, no pathologic findings noted
RECTUM:
-Luminal dilation, grade 2
OVARIES:
-Congestion, bilateral
This finding corresponds to necropsy observation no: 01.

* STATE AT NECROPSY: K0
DAYS ON TEST : 94 * ANIMAL NO. : 178
.....

* NECROPSY FINDINGS

THYMUS:
01: FOCUS/FOCI, SEVERAL, D=1 MM, DARK RED.
NO OTHER NECROPSY OBSERVATIONS NOTED

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	239/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 02, 500 MG/KG/DAY FEMALE

CONT./FF. ANIMAL NO. : 178

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Mineralization, focal, unilateral, grade 1
RECTUM:
Organ examined, no pathologic findings noted
THYMUS:
-Epithelial Cyst
-Hemorrhage, grade 1
This finding corresponds to necropsy observation no: 01.
-Atrophy, focal, grade 1

* STATE AT NECROPSY: K0		* ANIMAL NO. :	179
DAYS ON TEST	: 94		

* NECROPSY FINDINGS

THYMUS:
01: FOCUS/FOCI, D=4 MM, DARK RED.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
THYMUS:
-Epithelial Cyst
-Hemorrhage, multifocal, grade 1
This finding corresponds to necropsy observation no: 01.
-Atrophy, focal, grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	240/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 02, 500 MG/KG/DAY FEMALE

CONT./FF. ANIMAL NO. : 179

.....
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0	
DAYS ON TEST	: 94 * ANIMAL NO. : 180

.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Mineralization, focal, unilateral, grade 1
RECTUM:
Organ examined, no pathologic findings noted

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

**PATHOLOGY REPORT
INDIVIDUAL ANIMAL DATA**

PAGE : 241/ 343
RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

ANIMAL HEADING DATA
DOSE GROUP : 03, 1000 MG/KG/DAY

ANIMAL NUMBER	SEX M/F	DEFINED AND FINAL STATE OF NECROPSY	TEST DAYS	FIRST AND LAST DAY UNDER TEST	DATE OF NECROPSY
63	M	K0 K0	92	02-JAN-06 03-APR-06	04-APR-06
64	M	K0 K0	92	02-JAN-06 03-APR-06	04-APR-06
65	M	K0 K0	92	02-JAN-06 03-APR-06	04-APR-06
66	M	K0 K0	92	02-JAN-06 03-APR-06	04-APR-06
67	M	K0 K0	92	02-JAN-06 03-APR-06	04-APR-06
68	M	K0 K0	92	02-JAN-06 03-APR-06	04-APR-06
69	M	K0 K0	92	02-JAN-06 03-APR-06	04-APR-06
70	M	K0 K0	92	02-JAN-06 03-APR-06	04-APR-06
71	M	K0 K0	92	02-JAN-06 03-APR-06	04-APR-06
72	M	K0 K0	92	02-JAN-06 03-APR-06	04-APR-06
73	M	K0 K0	95	02-JAN-06 06-APR-06	07-APR-06
74	M	K0 K0	95	02-JAN-06 06-APR-06	07-APR-06
75	M	K0 K0	95	02-JAN-06 06-APR-06	07-APR-06
76	M	K0 K0	95	02-JAN-06 06-APR-06	07-APR-06
77	M	K0 K0	95	02-JAN-06 06-APR-06	07-APR-06
78	M	K0 K0	95	02-JAN-06 06-APR-06	07-APR-06
79	M	K0 K0	95	02-JAN-06 06-APR-06	07-APR-06
80	M	K0 K0	95	02-JAN-06 06-APR-06	07-APR-06
81	M	K0 K0	95	02-JAN-06 06-APR-06	07-APR-06
82	M	K0 K0	95	02-JAN-06 06-APR-06	07-APR-06
187	F	K0 K0	93	02-JAN-06 04-APR-06	05-APR-06
188	F	K0 K0	93	02-JAN-06 04-APR-06	05-APR-06
189	F	K0 K0	93	02-JAN-06 04-APR-06	05-APR-06
190	F	K0 K0	93	02-JAN-06 04-APR-06	05-APR-06
191	F	K0 K0	93	02-JAN-06 04-APR-06	05-APR-06
192	F	K0 K0	93	02-JAN-06 04-APR-06	05-APR-06
193	F	K0 K0	93	02-JAN-06 04-APR-06	05-APR-06
194	F	K0 K0	93	02-JAN-06 04-APR-06	05-APR-06
195	F	K0 K0	93	02-JAN-06 04-APR-06	05-APR-06
196	F	K0 K0	93	02-JAN-06 04-APR-06	05-APR-06
197	F	K0 K0	94	02-JAN-06 05-APR-06	06-APR-06
198	F	K0 K0	94	02-JAN-06 05-APR-06	06-APR-06
199	F	K0 K0	94	02-JAN-06 05-APR-06	06-APR-06
200	F	K0 K0	94	02-JAN-06 05-APR-06	06-APR-06
201	F	K0 K0	94	02-JAN-06 05-APR-06	06-APR-06
202	F	K0 K0	94	02-JAN-06 05-APR-06	06-APR-06
203	F	K0 K0	94	02-JAN-06 05-APR-06	06-APR-06
204	F	K0 K0	94	02-JAN-06 05-APR-06	06-APR-06
205	F	K0 K0	94	02-JAN-06 05-APR-06	06-APR-06
206	F	K0 K0	94	02-JAN-06 05-APR-06	06-APR-06

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	242/ 343
INDIVIDUAL ANIMAL DATA	RCC	:	A29553

TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 03, 1000 MG/KG/DAY
	MALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 92 * ANIMAL NO. : 63
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 2
-Foamy histiocytes, focal, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0
DAYS ON TEST : 92 * ANIMAL NO. : 64
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 2
-Foamy histiocytes, focal, grade 2
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	243/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 03, 1000 MG/KG/DAY
	MALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 92 * ANIMAL NO. : 65
.....

* NECROPSY FINDINGS

THYMUS:
01: FOCUS/FOCI, SEVERAL, D=1 MM, DARK RED.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, grade 1
KIDNEYS:
-Hyaline droplets, proximal convoluted tubules, bilateral,
grade 1
RECTUM:
Organ examined, no pathologic findings noted
THYMUS:
-Epithelial Cyst
-Hemorrhage, multifocal, grade 1
This finding corresponds to necropsy observation no: 01.

* STATE AT NECROPSY: K0
DAYS ON TEST : 92 * ANIMAL NO. : 66
.....

* NECROPSY FINDINGS

LUNGS:
01: LEFT LOBE: FOCUS/FOCI, ISOLATED, D=2 MM, REDDISH.
NO OTHER NECROPSY OBSERVATIONS NOTED

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	: 244/ 343
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TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 03, 1000 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 66

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:

- Lymphoid hyperplasia, grade 1
- Foamy histiocytes, focal, grade 1

KIDNEYS:

- Hyaline droplets, proximal convoluted tubules, bilateral, grade 1

RECTUM:

Organ examined, no pathologic findings noted

LUNGS:

- Nothing abnormal discovered corresponding to necropsy observation no.01.
- Vascular mineralization, focal, grade 1
- Osseous metaplasia, focal, grade 1

* STATE AT NECROPSY: K0

DAYS ON TEST : 92

* ANIMAL NO. : 67

* NECROPSY FINDINGS

THYMUS:

01: FOCUS/FOCI, D=4 MM, DARK RED.

LYMPH NODES:

01: MEDIASTINAL: DISCOLORATION, DARK RED.

NO OTHER NECROPSY OBSERVATIONS NOTED

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	245/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 03, 1000 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 67

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
 -Lymphoid hyperplasia, grade 1
 -Foamy histiocytes, focal, grade 1
 KIDNEYS:
 -Hyaline droplets, proximal convoluted tubules, bilateral,
 grade 1
 RECTUM:
 Organ examined, no pathologic findings noted
 THYMUS:
 -Hemorrhage, multifocal, grade 1
 This finding corresponds to necropsy observation no: 01.
 LYMPH NODES:
 -Hemorrhage, multifocal, bilateral, grade 2
 This finding corresponds to necropsy observation no: 01.

* STATE AT NECROPSY: K0		
DAYS ON TEST	:	92
	* ANIMAL NO. :	68

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
 -Lymphoid hyperplasia, grade 1
 -Foamy histiocytes, grade 2
 KIDNEYS:
 -Hyaline droplets, proximal convoluted tubules, bilateral,
 grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	246/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 03, 1000 MG/KG/DAY

CONT./FF. ANIMAL NO. : 68

RECTUM:
Organ examined, no pathologic findings noted

* STATE AT NECROPSY: K0	
DAYS ON TEST : 92	* ANIMAL NO. : 69

* NECROPSY FINDINGS

THYMUS:
01: FOCUS/FOCI, ISOLATED, D=4 MM, DARK RED.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, focal, grade 1
KIDNEYS:
-Tubular basophilia, focal, unilateral, grade 1
-Lymphoid infiltration, unilateral, grade 1
RECTUM:
Organ examined, no pathologic findings noted
THYMUS:
-Epithelial Cyst
-Hemorrhage, focal, grade 1
This finding corresponds to necropsy observation no: 01.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	247/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP : 03, 1000 MG/KG/DAY	MALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 92 * ANIMAL NO. : 70
.....

* NECROPSY FINDINGS

KIDNEYS:
01: RIGHT SIDE: PELVIC DILATION.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Pelvic dilation, unilateral, grade 1
This finding corresponds to necropsy observation no: 01.
RECTUM:
Organ examined, no pathologic findings noted

* STATE AT NECROPSY: K0
DAYS ON TEST : 92 * ANIMAL NO. : 71
.....

* NECROPSY FINDINGS

KIDNEYS:
01: LEFT SIDE: PELVIC DILATION.
TESTES:
01: RIGHT SIDE: REDUCED IN SIZE, D=14X8 MM.
NO OTHER NECROPSY OBSERVATIONS NOTED

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	248/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 03, 1000 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 71

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, focal, grade 2
KIDNEYS:
-Pelvic dilation, unilateral, grade 1
This finding corresponds to necropsy observation no: 01.
RECTUM:
Organ examined, no pathologic findings noted
TESTES:
-Tubular atrophy, diffuse, bilateral, grade 4
This finding corresponds to necropsy observation no: 01.

* STATE AT NECROPSY: K0	
DAYS ON TEST	: 92
* ANIMAL NO.	: 72

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, focal, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	: 249/ 343
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TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP : 03, 1000 MG/KG/DAY	MALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 95 * ANIMAL NO. : 73
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, grade 2
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0
DAYS ON TEST : 95 * ANIMAL NO. : 74
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, grade 1
KIDNEYS:
-Tubular cystic dilation, focal, unilateral, grade 1
-Hyaline droplets, proximal convoluted tubules, bilateral,
grade 1
RECTUM:
Organ examined, no pathologic findings noted

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1001

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	250/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 03, 1000 MG/KG/DAY
	MALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 95 * ANIMAL NO. : 75
.....

* NECROPSY FINDINGS
NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, grade 1
KIDNEYS:
-Hyaline droplets, proximal convoluted tubules, bilateral,
grade 1
RECTUM:
Organ examined, no pathologic findings noted

* STATE AT NECROPSY: K0
DAYS ON TEST : 95 * ANIMAL NO. : 76
.....

* NECROPSY FINDINGS
NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Hyaline droplets, proximal convoluted tubules, bilateral,
grade 1

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1002

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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INDIVIDUAL ANIMAL DATA	RCC	:	A29553

TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 03, 1000 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 76

RECTUM:
Organ examined, no pathologic findings noted

* STATE AT NECROPSY: K0	
DAYS ON TEST : 95	* ANIMAL NO. : 77

* NECROPSY FINDINGS
NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Hyaline droplets, proximal convoluted tubules, bilateral,
grade 1
-Tubular basophilia, focal, unilateral, grade 2
RECTUM:
Organ examined, no pathologic findings noted

09009e538024303a

1003

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	252/ 343
INDIVIDUAL ANIMAL DATA	RCC	:	A29553

TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 03, 1000 MG/KG/DAY
	MALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 95 * ANIMAL NO. : 78
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0
DAYS ON TEST : 95 * ANIMAL NO. : 79
.....

* NECROPSY FINDINGS

KIDNEYS:
01: LEFT SIDE: PELVIC DILATION.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, grade 2
KIDNEYS:
-Hyaline droplets, proximal convoluted tubules, bilateral,
grade 1
-Pelvic dilation, unilateral, grade 1
This finding corresponds to necropsy observation no: 01.

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1004

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	253/ 343
INDIVIDUAL ANIMAL DATA	RCC	:	A29553

TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 03, 1000 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 79

RECTUM:
Organ examined, no pathologic findings noted

* STATE AT NECROPSY: K0	
DAYS ON TEST : 95	* ANIMAL NO. : 80

* NECROPSY FINDINGS

KIDNEYS:
01: LEFT SIDE: PELVIC DILATION.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, focal, grade 1
KIDNEYS:
-Hyaline droplets, proximal convoluted tubules, bilateral,
grade 1
-Pelvic dilation, unilateral, grade 1
This finding corresponds to necropsy observation no: 01.
RECTUM:
Organ examined, no pathologic findings noted

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1005

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	: 254/ 343
INDIVIDUAL ANIMAL DATA	RCC	: A29553

TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 03, 1000 MG/KG/DAY
	MALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 95 * ANIMAL NO. : 81
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, grade 1
KIDNEYS:
-Hyaline droplets, proximal convoluted tubules, bilateral,
grade 1
-Tubular basophilia, focal, unilateral, grade 1
RECTUM:
Organ examined, no pathologic findings noted

* STATE AT NECROPSY: K0
DAYS ON TEST : 95 * ANIMAL NO. : 82
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, grade 1

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1006

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	: 255/ 343
INDIVIDUAL ANIMAL DATA	RCC	: A29553

<i>TEST ARTICLE</i>	: ULTRAZINE FG-R	<i>PATHOL. NO.:</i> 11023 ROL
<i>TEST SYSTEM</i>	: RAT, 13-Week, Oral	<i>DATE</i> : 14-FEB-07
<i>SPONSOR</i>	: DSM Nutritional Products AG	<i>PathData®System</i> V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP : 03, 1000 MG/KG/DAY	MALE

CONT./FF. ANIMAL NO. : 82

.....

KIDNEYS:
-Hyaline droplets, proximal convoluted tubules, bilateral,
grade 1
-Tubular basophilia, focal, unilateral, grade 1
RECTUM:
Organ examined, no pathologic findings noted

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1007

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	: 256/ 343
INDIVIDUAL ANIMAL DATA	RCC	: A29553

TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP : 03, 1000 MG/KG/DAY	FEMALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 93 * ANIMAL NO. : 187
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Mineralization, focal, unilateral, grade 1
-Tubular vacuolation, bilateral, grade 1
RECTUM:
Organ examined, no pathologic findings noted

* STATE AT NECROPSY: K0
DAYS ON TEST : 93 * ANIMAL NO. : 188
.....

* NECROPSY FINDINGS

THYMUS:
01: FOCUS/FOCI, SEVERAL, D=1 MM, DARK RED.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Tubular vacuolation, bilateral, grade 1

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1008

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	: 257/ 343
INDIVIDUAL ANIMAL DATA	RCC	: A29553

TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 03, 1000 MG/KG/DAY
	FEMALE

CONT./FF. ANIMAL NO. : 188

.....

RECTUM:
Organ examined, no pathologic findings noted

THYMUS:
-Epithelial Cyst
-Hemorrhage, multifocal, grade 1
This finding corresponds to necropsy observation no: 01.

* STATE AT NECROPSY: K0	
DAYS ON TEST : 93	* ANIMAL NO. : 189

.....

* NECROPSY FINDINGS

SKIN/SUBCUTIS:
01: TIP OF TAIL: DEJECTED.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, focal, grade 1

SKIN/SUBCUTIS:
-Tail, bone atrophy, grade 1
This finding corresponds to necropsy observation no: 01.
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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1009

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	: 258/ 343
INDIVIDUAL ANIMAL DATA	RCC	: A29553

TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 03, 1000 MG/KG/DAY FEMALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 93 * ANIMAL NO. : 190
.....

* NECROPSY FINDINGS

PANCREAS:
01: DISCOLORATION, REDDISH.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Mineralization, focal, unilateral, grade 1
-Lymphoid infiltration, unilateral, grade 1
RECTUM:
Organ examined, no pathologic findings noted
PANCREAS:
-Congestion, focal
This finding corresponds to necropsy observation no: 01.

* STATE AT NECROPSY: K0
DAYS ON TEST : 93 * ANIMAL NO. : 191
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

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1010

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	: 259/ 343
INDIVIDUAL ANIMAL DATA	RCC	: A29553

TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP : 03, 1000 MG/KG/DAY	FEMALE

CONT./FF. ANIMAL NO. : 191

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Mineralization, focal, unilateral, grade 1
-Transitional cell hyperplasia, focal, unilateral, grade 1
RECTUM:
-Luminal dilation, grade 1

* STATE AT NECROPSY: K0	
DAYS ON TEST : 93	* ANIMAL NO. : 192

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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1011

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	: 260/ 343
INDIVIDUAL ANIMAL DATA	RCC	: A29553

TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP : 03, 1000 MG/KG/DAY	FEMALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 93 * ANIMAL NO. : 193
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Mineralization, focal, unilateral, grade 1
RECTUM:
Organ examined, no pathologic findings noted

* STATE AT NECROPSY: K0
DAYS ON TEST : 93 * ANIMAL NO. : 194
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, grade 1
KIDNEYS:
-Mineralization, focal, unilateral, grade 1
-Tubular vacuolation, bilateral, grade 1

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1012

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	261/ 343
INDIVIDUAL ANIMAL DATA	RCC	:	A29553

TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 03, 1000 MG/KG/DAY
	FEMALE

CONT./FF. ANIMAL NO. : 194

RECTUM:
Organ examined, no pathologic findings noted

* STATE AT NECROPSY: K0	
DAYS ON TEST : 93	* ANIMAL NO. : 195

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Tubular vacuolation, bilateral, grade 1
RECTUM:
Organ examined, no pathologic findings noted

09009e538024303a

1013

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	262/ 343
INDIVIDUAL ANIMAL DATA	RCC	:	A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS

DOSE GROUP : 03, 1000 MG/KG/DAY FEMALE

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* STATE AT NECROPSY: KO
DAYS ON TEST      :      93
* ANIMAL NO.      :      196

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* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, grade 1
KIDNEYS:
-Mineralization, focal, bilateral, grade 1
RECTUM:
Organ examined, no pathologic findings noted

```
* STATE AT NECROPSY: KO
DAYS ON TEST      :    94                      * ANIMAL NO. :    197
```

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Mineralization, focal, bilateral, grade 1
RECTUM:
Organ examined, no pathologic findings noted

09009e538024303a

1014

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	: 263/ 343
INDIVIDUAL ANIMAL DATA	RCC	: A29553

<i>TEST ARTICLE</i>	: ULTRAZINE FG-R	<i>PATHOL. NO.:</i>	11023 ROL
<i>TEST SYSTEM</i>	: RAT, 13-Week, Oral	<i>DATE</i>	: 14-FEB-07
<i>SPONSOR</i>	: DSM Nutritional Products AG	<i>PathData®System</i>	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 03, 1000 MG/KG/DAY

* STATE AT NECROPSY: K0	
DAYS ON TEST	: 94

* ANIMAL NO. :	198
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* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, grade 2
KIDNEYS:
-Mineralization, focal, unilateral, grade 1
-Tubular vacuolation, bilateral, grade 1
RECTUM:
Organ examined, no pathologic findings noted

* STATE AT NECROPSY: K0	
DAYS ON TEST	: 94

* ANIMAL NO. :	199
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* NECROPSY FINDINGS

KIDNEYS:
01: LEFT SIDE: PELVIC DILATION.
NO OTHER NECROPSY OBSERVATIONS NOTED

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1015

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	264/ 343
INDIVIDUAL ANIMAL DATA	RCC	:	A29553

TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 03, 1000 MG/KG/DAY
	FEMALE

CONT./FF. ANIMAL NO. : 199

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 2
KIDNEYS:
-Pelvic dilation, unilateral, grade 1
This finding corresponds to necropsy observation no: 01.
-Mineralization, focal, unilateral, grade 1
RECTUM:
Organ examined, no pathologic findings noted

* STATE AT NECROPSY: K0	
DAYS ON TEST	: 94
* ANIMAL NO.	: 200

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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1016

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT
INDIVIDUAL ANIMAL DATA

PAGE : 265/ 343
RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R
TEST SYSTEM : RAT, 13-Week, Oral
SPONSOR : DSM Nutritional Products AG

PATHOL. NO.: 11023 ROL
DATE : 14-FEB-07
PathData®System V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS
DOSE GROUP : 03. 1000 MG/KG/DAY

FEMALE

* STATE AT NECROPSY. K0

DAYS ON TEST : 94

* ANIMAL NO. : 201

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:

-Lymphoid hyperplasia, grade 1

ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0

DAYS ON TEST : 94

* ANIMAL NO. : 202

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:

-Lymphoid hyperplasia, grade 1

KIDNEYS:

Organ examined, no pathologic findings noted

RECTUM •

-Luminal dilation, grade 1

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1017

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	: 266/ 343
INDIVIDUAL ANIMAL DATA	RCC	: A29553

TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP : 03, 1000 MG/KG/DAY	FEMALE

* STATE AT NECROPSY: K0	
DAYS ON TEST : 94	* ANIMAL NO. : 203
.....	

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 2
-Foamy histiocytes, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0	
DAYS ON TEST : 94	* ANIMAL NO. : 204
.....	

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, grade 2
KIDNEYS:
-Mineralization, focal, bilateral, grade 1
RECTUM:
Organ examined, no pathologic findings noted

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1018

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	267/ 343
INDIVIDUAL ANIMAL DATA	RCC	:	A29553

TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 03, 1000 MG/KG/DAY
	FEMALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 94 * ANIMAL NO. : 205
.....

* NECROPSY FINDINGS

UTERUS:
01: RIGHT HORN: DISCOLORATION, REDDISH.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
KIDNEYS:
-Mineralization, focal, bilateral, grade 1
RECTUM:
Organ examined, no pathologic findings noted
UTERUS:
-Congestion, diffuse
This finding corresponds to necropsy observation no: 01.

* STATE AT NECROPSY: K0
DAYS ON TEST : 94 * ANIMAL NO. : 206
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

09009e538024303a

1019

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	: 268/ 343
INDIVIDUAL ANIMAL DATA	RCC	: A29553

<i>TEST ARTICLE</i>	: ULTRAZINE FG-R	<i>PATHOL. NO.:</i> 11023 ROL
<i>TEST SYSTEM</i>	: RAT, 13-Week, Oral	<i>DATE</i> : 14-FEB-07
<i>SPONSOR</i>	: DSM Nutritional Products AG	<i>PathData®System</i> V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP : 03, 1000 MG/KG/DAY	FEMALE

CONT./FF. ANIMAL NO. : 206

* MICROSCOPIC FINDINGS

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, focal, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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1020

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

**PATHOLOGY REPORT
INDIVIDUAL ANIMAL DATA**

PAGE : 269/ 343
RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R PATHOL. NO.: 11023 ROL
TEST SYSTEM : RAT, 13-Week, Oral DATE : 14-FEB-07
SPONSOR : DSM Nutritional Products AG PathData®System V6.2b5

ANIMAL HEADING DATA
DOSE GROUP : 04, 2000 MG/KG/DAY

ANIMAL NUMBER	SEX M/F	DEFINED AND FINAL STATE OF NECROPSY	TEST DAYS	FIRST AND LAST DAY UNDER TEST	DATE OF NECROPSY
89	M	K0	K0	92	02-JAN-06 03-APR-06 04-APR-06
90	M	K0	K0	92	02-JAN-06 03-APR-06 04-APR-06
91	M	K0	K0	92	02-JAN-06 03-APR-06 04-APR-06
92	M	K0	K0	92	02-JAN-06 03-APR-06 04-APR-06
93	M	K0	K0	92	02-JAN-06 03-APR-06 04-APR-06
94	M	K0	K0	92	02-JAN-06 03-APR-06 04-APR-06
95	M	K0	K0	92	02-JAN-06 03-APR-06 04-APR-06
96	M	K0	K0	92	02-JAN-06 03-APR-06 04-APR-06
97	M	K0	K0	92	02-JAN-06 03-APR-06 04-APR-06
98	M	K0	K0	92	02-JAN-06 03-APR-06 04-APR-06
99	M	K0	K0	95	02-JAN-06 06-APR-06 07-APR-06
100	M	K0	K0	95	02-JAN-06 06-APR-06 07-APR-06
101	M	K0	K0	95	02-JAN-06 06-APR-06 07-APR-06
102	M	K0	K0	95	02-JAN-06 06-APR-06 07-APR-06
103	M	K0	K0	95	02-JAN-06 06-APR-06 07-APR-06
104	M	K0	K0	95	02-JAN-06 06-APR-06 07-APR-06
105	M	K0	K0	95	02-JAN-06 06-APR-06 07-APR-06
106	M	K0	K0	95	02-JAN-06 06-APR-06 07-APR-06
107	M	K0	K0	95	02-JAN-06 06-APR-06 07-APR-06
108	M	K0	K0	95	02-JAN-06 06-APR-06 07-APR-06
109	M	R1	R1	92	02-JAN-06 03-APR-06 02-MAY-06
110	M	R1	R1	92	02-JAN-06 03-APR-06 02-MAY-06
111	M	R1	R1	92	02-JAN-06 03-APR-06 02-MAY-06
112	M	R1	R1	92	02-JAN-06 03-APR-06 02-MAY-06
113	M	R1	R1	92	02-JAN-06 03-APR-06 02-MAY-06
114	M	R1	R1	92	02-JAN-06 03-APR-06 02-MAY-06
115	M	R1	R1	92	02-JAN-06 03-APR-06 02-MAY-06
116	M	R1	R1	92	02-JAN-06 03-APR-06 02-MAY-06
117	M	R1	R1	92	02-JAN-06 03-APR-06 02-MAY-06
118	M	R1	R1	92	02-JAN-06 03-APR-06 02-MAY-06
213	F	K0	K0	93	02-JAN-06 04-APR-06 05-APR-06
214	F	K0	K0	93	02-JAN-06 04-APR-06 05-APR-06
215	F	K0	K0	93	02-JAN-06 04-APR-06 05-APR-06
216	F	K0	K0	93	02-JAN-06 04-APR-06 05-APR-06
217	F	K0	K0	93	02-JAN-06 04-APR-06 05-APR-06
218	F	K0	K0	93	02-JAN-06 04-APR-06 05-APR-06
219	F	K0	K0	93	02-JAN-06 04-APR-06 05-APR-06
220	F	K0	K0	93	02-JAN-06 04-APR-06 05-APR-06
221	F	K0	K0	93	02-JAN-06 04-APR-06 05-APR-06
222	F	K0	K0	93	02-JAN-06 04-APR-06 05-APR-06

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

**PATHOLOGY REPORT
INDIVIDUAL ANIMAL DATA**

PAGE : 270/ 343
RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R
TEST SYSTEM : RAT, 13-Week, Oral
SPONSOR : DSM Nutritional Products AG

PATHOL. NO.: 11023 ROL
DATE : 14-FEB-07
PathData®System V6.2b5

ANIMAL HEADING DATA
DOSE GROUP : 04, 2000 MG/KG/DAY

ANIMAL NUMBER	SEX M/F	DEFINED AND FINAL STATE OF NECROPSY	TEST DAYS	FIRST AND LAST DAY UNDER TEST	DATE OF NECROPSY
223	F	K0	K0	94	02-JAN-06 05-APR-06 06-APR-06
224	F	K0	K0	94	02-JAN-06 05-APR-06 06-APR-06
225	F	K0	K0	94	02-JAN-06 05-APR-06 06-APR-06
226	F	K0	K0	94	02-JAN-06 05-APR-06 06-APR-06
227	F	K0	K0	94	02-JAN-06 05-APR-06 06-APR-06
228	F	K0	K0	94	02-JAN-06 05-APR-06 06-APR-06
229	F	K0	K0	94	02-JAN-06 05-APR-06 06-APR-06
230	F	K0	K0	94	02-JAN-06 05-APR-06 06-APR-06
231	F	K0	K0	94	02-JAN-06 05-APR-06 06-APR-06
232	F	K0	K0	94	02-JAN-06 05-APR-06 06-APR-06
233	F	R1	R1	92	02-JAN-06 03-APR-06 02-MAY-06
234	F	R1	R1	92	02-JAN-06 03-APR-06 02-MAY-06
235	F	R1	R1	92	02-JAN-06 03-APR-06 02-MAY-06
236	F	R1	R1	92	02-JAN-06 03-APR-06 02-MAY-06
237	F	R1	R1	92	02-JAN-06 03-APR-06 02-MAY-06
238	F	R1	R1	92	02-JAN-06 03-APR-06 02-MAY-06
239	F	R1	R1	92	02-JAN-06 03-APR-06 02-MAY-06
240	F	R1	R1	92	02-JAN-06 03-APR-06 02-MAY-06
241	F	R1	R1	92	02-JAN-06 03-APR-06 02-MAY-06
242	F	R1	R1	92	02-JAN-06 03-APR-06 02-MAY-06

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	271/ 343
INDIVIDUAL ANIMAL DATA	RCC	:	A29553

<i>TEST ARTICLE</i>	:	ULTRAZINE FG-R	<i>PATHOL. NO.:</i>	11023 ROL
<i>TEST SYSTEM</i>	:	RAT, 13-Week, Oral	<i>DATE</i>	: 14-FEB-07
<i>SPONSOR</i>	:	DSM Nutritional Products AG	<i>PathData®System</i>	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	MALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 92 * ANIMAL NO. : 89
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, multifocal, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, grade 2
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
SUBLINGUAL GLANDS:
Only one of paired organs examined/present
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
PARATHYROID GLANDS:
Tissue not present for histologic examination
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	: 272/ 343
INDIVIDUAL ANIMAL DATA	RCC	: A29553

TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	MALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 92 * ANIMAL NO. : 90
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Foamy histiocytes, grade 3
KIDNEYS:
-Hyaline droplets, proximal convoluted tubules, bilateral,
grade 1
-Tubular vacuolation, bilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
COLON:
-Luminal dilation, grade 1
LUNGS:
-Vascular mineralization, focal, grade 1
THYMUS:
-Epithelial Cyst
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
ADRENAL CORTICES:
-Fatty change, bilateral, grade 1
ZYMBAL'S GLANDS:
Tissue not present for histologic examination

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	: 273/ 343
INDIVIDUAL ANIMAL DATA	RCC	: A29553

TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP : 04, 2000 MG/KG/DAY	MALE

CONT./FF. ANIMAL NO. : 90

ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0	
DAYS ON TEST : 92	* ANIMAL NO. : 91

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1
LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, grade 2
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 2
THYMUS:
-Epithelial Cyst
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, focal, unilateral, grade 1
PARATHYROID GLANDS:
Only one of paired organs examined/present

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	274/ 343
INDIVIDUAL ANIMAL DATA	RCC	:	A29553

TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 91

HARDERIAN GLANDS:
-Porphyrin deposits, bilateral, grade 1
BRONCHIAL LYMPH NODE:
-Lymphoid hyperplasia, grade 1
ZYMBAL'S GLANDS:
Tissue not present for histologic examination
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0		
DAYS ON TEST	:	92
		* ANIMAL NO. : 92

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 2
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, grade 3
KIDNEYS:
-Hyaline droplets, bilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	: 275/ 343
INDIVIDUAL ANIMAL DATA	RCC	: A29553

TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP : 04, 2000 MG/KG/DAY	MALE

CONT./FF. ANIMAL NO. : 92

LUNGS:
-Vascular mineralization, focal, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
PARATHYROID GLANDS:
Only one of paired organs examined/present
ADRENAL CORTICES:
-Fatty change, bilateral, grade 1
PITUITARY GLAND:
-Cyst, single, pars intermedia
ZYMBALE'S GLANDS:
Tissue not present for histologic examination
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0	
DAYS ON TEST : 92	* ANIMAL NO. : 93

* NECROPSY FINDINGS

THYMUS:
01: FOCUS/FOCI, SEVERAL, D=1 MM, DARK RED.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, multifocal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	: 276/ 343
INDIVIDUAL ANIMAL DATA	RCC	: A29553

TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 93

.....

MESENTERIC LYMPH NODE:
-Foamy histiocytes, grade 3
KIDNEYS:
-Hyaline droplets, bilateral, grade 1
STOMACH:
-Glandular dilation, focal, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
LUNGS:
-Vascular mineralization, focal, grade 1
THYMUS:
-Hemorrhage, multifocal, grade 1
This finding corresponds to necropsy observation no: 01.
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Only one of paired organs examined/present
OPTIC NERVES:
Only one of paired organs examined/present
PITUITARY GLAND:
-Cyst, single, pars distalis
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	: 277/ 343
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TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP : 04, 2000 MG/KG/DAY	MALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 92 * ANIMAL NO. : 94
.....

* NECROPSY FINDINGS

KIDNEYS:
01: RIGHT SIDE: PELVIC DILATION.
THYMUS:
01: FOCUS/FOCI, ISOLATED, D=1 MM, REDDISH.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1
LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Foamy histiocytes, grade 3
KIDNEYS:
-Hyaline droplets, bilateral, grade 1
-Pelvic dilation, bilateral, grade 2
This finding corresponds to necropsy observation no: 01.
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
RECTUM:
-Luminal dilation, grade 1
LUNGS:
-Vascular mineralization, focal, grade 1
THYMUS:
-Epithelial Cyst
-Hemorrhage, focal, grade 1
This finding corresponds to necropsy observation no: 01.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	: 278/ 343
INDIVIDUAL ANIMAL DATA	RCC	: A29553

TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP : 04, 2000 MG/KG/DAY	MALE

CONT./FF. ANIMAL NO. : 94

MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Only one of paired organs examined/present
HARDERIAN GLANDS:
-Porphyrin deposits, unilateral, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0	
DAYS ON TEST : 92	* ANIMAL NO. : 95

* NECROPSY FINDINGS

THYMUS:
01: DISCOLORATION, REDDISH.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, focal, grade 2
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	279/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 95

PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
COLON:
-Luminal dilation, grade 1
LUNGS:
-Vascular mineralization, focal, grade 1
THYMUS:
-Congestion
This finding corresponds to necropsy observation no: 01.
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Tissue not present for histologic examination
ADRENAL CORTICES:
-Fatty change, unilateral, grade 1
HARDERIAN GLANDS:
-Porphyrin deposits, unilateral, grade 1
ZYMBAL'S GLANDS:
Tissue not present for histologic examination
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0		
DAYS ON TEST	:	92
	* ANIMAL NO. :	96

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	: 280/ 343
INDIVIDUAL ANIMAL DATA	RCC	: A29553

TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 96

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, grade 2
KIDNEYS:
-Tubular basophilia, focal, unilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
COLON:
-Luminal dilation, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Tissue not present for histologic examination
MAMMARY GLAND:
-Adipose tissue only
BRONCHIAL LYMPH NODE:
-Lymphoid hyperplasia, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	: 281/ 343
INDIVIDUAL ANIMAL DATA	RCC	: A29553

TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP : 04, 2000 MG/KG/DAY	MALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 92 * ANIMAL NO. : 97
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, multifocal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Foamy histiocytes, focal, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
LUNGS:
-Vascular mineralization, focal, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Only one of paired organs examined/present
ADRENAL CORTICES:
-Fatty change, bilateral, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	: 282/ 343
INDIVIDUAL ANIMAL DATA	RCC	: A29553

TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	MALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 92 * ANIMAL NO. : 98
.....

* NECROPSY FINDINGS

BRONCHIAL LYMPH NODE:
01: DISCOLORATION, REDDISH.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 2
LIVER:
-Lymphoid cell infiltration, multifocal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Foamy histiocytes, focal, grade 2
KIDNEYS:
-Hyaline droplets, proximal convoluted tubules, bilateral,
grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
BRONCHIAL LYMPH NODE:
-Hemorrhage, focal, grade 1
This finding corresponds to necropsy observation no: 01.
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	283/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	MALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 95 * ANIMAL NO. : 99
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1
LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Foamy histiocytes, grade 3
KIDNEYS:
-Tubular vacuolation, bilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
LUNGS:
-Vascular mineralization, focal, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
PARATHYROID GLANDS:
Tissue not present for histologic examination
ADRENAL CORTICES:
-Fatty change, bilateral, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	: 284/ 343
INDIVIDUAL ANIMAL DATA	RCC	: A29553

TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	MALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 95 * ANIMAL NO. : 100
.....

* NECROPSY FINDINGS

THYMUS:
01: FOCUS/FOCI, SEVERAL, D=1 MM, DARK RED.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Foamy histiocytes, focal, grade 2
KIDNEYS:
-Hyaline droplets, proximal convoluted tubules, bilateral, grade 1
-Tubular basophilia, focal, unilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
LUNGS:
-Vascular mineralization, focal, grade 1
THYMUS:
-Epithelial Cyst
-Congestion, multifocal
This finding corresponds to necropsy observation no: 01.
EPIDIDYMIDES:
-Tubular Vacuolation, unilateral, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT
INDIVIDUAL ANIMAL DATA

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RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R
TEST SYSTEM : RAT, 13-Week, Oral
SPONSOR : DSM Nutritional Products AG

PATHOL. NO.: 11023 ROL
DATE : 14-FEB-07
PathData®System V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS
DOSE GROUP : 04. 2000 MG/KG/DAY

MALE

CONT./FF. ANIMAL NO. : 100

PARATHYROID GLANDS:

Only one of paired organs examined/present

ADRENAL MEDULLAS:

Tissue not present for histologic examination

MAMMARY GLAND:

- Adipose tissue only

HARDERIAN GLANDS:

-Porphyrin deposits, bilateral, grade 1

ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0

DAYS ON TEST : 95

* ANIMAL NO. : 101

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

TRACHEA:

-Glandular ectasia, grade 1

LIVER:

-Lymphoid cell infiltration, focal, grade 1

-Fatty change, grade 1

SPLEEN:

- Increased hemopoiesis, grade 1

MESENTERIC LYMPH NODE:

-Lymphoid hyperplasia, grade 1

-Foamy histiocytes, grade 2

KIDNEYS:

-Hyaline droplets, bilateral, grade 1

-Tubular basophilia, focal, unilateral, grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT
INDIVIDUAL ANIMAL DATA

PAGE : 286 / 343
RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R
TEST SYSTEM : RAT, 13-Week, Oral
SPONSOR : DSM Nutritional Products AG

PATHOL. NO.: 11023 ROL
DATE : 14-FEB-07
PathData®System V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS
DOSE GROUP : 04. 2000 MG/KG/DAY

MALE

CONT./FF. ANIMAL NO. : 101

PEYER'S PATCHES (JEJUNUM):
 -Lymphoid Hyperplasia, grade 1
 PEYER'S PATCHES (ILEUM):
 -Lymphoid Hyperplasia, grade 1
 LUNGS:
 -Vascular mineralization, focal, grade 1
 THYMUS:
 -Epithelial Cyst
 MANDIBULAR LYMPH NODES:
 Only one of paired organs examined/present
 -Lymphoid Hyperplasia, unilateral, grade 1
 PARATHYROID GLANDS:
 Only one of paired organs examined/present
 ADRENAL CORTICES:
 -Fatty change, unilateral, grade 1
 ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0

DAYS ON TEST : 95

* ANIMAL NO. : 102

* NECROPSY FINDINGS

KIDNEYS:
01: RIGHT SIDE: PELVIC DILATION.
NO OTHER NECROPSY OBSERVATIONS NOTED

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 102

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, multifocal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Foamy histiocytes, focal, grade 2
KIDNEYS:
-Pelvic dilation, bilateral, grade 1
This finding corresponds to necropsy observation no: 01.
-Tubular vacuolation, bilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
RECTUM:
-Luminal dilation, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Only one of paired organs examined/present
ADRENAL CORTICES:
-Fatty change, unilateral, grade 1
HARDERIAN GLANDS:
-Porphyrin deposits, bilateral, grade 1
-Inflammation, focal, chronic, unilateral, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	MALE

* STATE AT NECROPSY: KO
DAYS ON TEST : 95 * ANIMAL NO. : 103
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, multifocal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, focal, grade 1
KIDNEYS:
-Hyaline droplets, proximal convoluted tubules, bilateral,
grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
THYMUS:
-Epithelial Cyst
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, focal, unilateral, grade 1
ADRENAL CORTICES:
-Fatty change, unilateral, grade 1
-Necrosis, focal, bilateral, grade 1
-Hemorrhage, focal, in relation to necrosis, bilateral, grade 1
MAMMARY GLAND:
-Adipose tissue only
HARDERIAN GLANDS:
-Inflammation, focal, chronic, unilateral, grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY

CONT./FF. ANIMAL NO. : 103

ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0	
DAYS ON TEST : 95	* ANIMAL NO. : 104

* NECROPSY FINDINGS

KIDNEYS:
01: PELVIC DILATION.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, multifocal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, grade 3
KIDNEYS:
-Tubular basophilia, focal, unilateral, grade 1
-Pelvic dilation, bilateral, grade 1
This finding corresponds to necropsy observation no: 01.
STOMACH:
-Squamous Cyst, single, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY MALE

CONT./FF. ANIMAL NO. : 104

THYMUS:
-Epithelial Cyst
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
THYROID GLAND (BOTH LOBES):
-Thymic ectopia, focal, unilateral
PARATHYROID GLANDS:
Tissue not present for histologic examination
ADRENAL CORTICES:
-Fatty change, bilateral, grade 2
MAMMARY GLAND:
-Adipose tissue only
HARDERIAN GLANDS:
-Porphyrin deposits, bilateral, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0	
DAYS ON TEST : 95	* ANIMAL NO. : 105

* NECROPSY FINDINGS

THYMUS:
01: FOCUS/FOCI, SEVERAL, D=1 MM, DARK RED.
NO OTHER NECROPSY OBSERVATIONS NOTED

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 105

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, focal, grade 2
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
-Mineralization, grade 1
RECTUM:
-Luminal dilation, grade 1
LUNGS:
-Vascular mineralization, grade 1
THYMUS:
-Epithelial Cyst
-Hemorrhage, multifocal, grade 1
This finding corresponds to necropsy observation no: 01.
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Only one of paired organs examined/present
ADRENAL CORTICES:
-Fatty change, unilateral, grade 1
MAMMARY GLAND:
-Adipose tissue only
HARDERIAN GLANDS:
-Porphyrin deposits, unilateral, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	MALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 95 * ANIMAL NO. : 106
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, focalfocal, grade 2
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
COLON:
-Luminal dilation, grade 2
LUNGS:
-Vascular mineralization, focal, grade 1
THYMUS:
-Epithelial Cyst
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Only one of paired organs examined/present
ADRENAL CORTICES:
-Fatty change, unilateral, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP : 04, 2000 MG/KG/DAY	MALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 95 * ANIMAL NO. : 107
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 2
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, focal, grade 2
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
TESTES:
-Sertoli cell vacuolation, unilateral, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
THYROID GLAND (BOTH LOBES):
Only one of paired organs examined/present
-C-cell hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Only one of paired organs examined/present
EYES:
-Retinal degeneration, unilateral, grade 2
PITUITARY GLAND:
-Cyst, multiple, pars intermedia
ZYMBA'S GLANDS:
Only one of paired organs examined/present
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY MALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 95 * ANIMAL NO. : 108
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1
LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Hematopoiesis, focal, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 2
-Foamy histiocytes, grade 3
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
LUNGS:
-Vascular mineralization, grade 1
EPIDIDYIMIDES:
-Tubular Vacuolation, unilateral, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
PARATHYROID GLANDS:
Only one of paired organs examined/present
ADRENAL CORTICES:
-Fatty change, bilateral, grade 1
HARDERIAN GLANDS:
-Porphyrin deposits, unilateral, grade 1
BRONCHIAL LYMPH NODE:
Tissue not present for histologic examination
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	295/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	MALE

* STATE AT NECROPSY: R1
DAYS ON TEST : 92 * ANIMAL NO. : 109
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, multifocal, grade 1
-Fatty change, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, grade 2
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Only one of paired organs examined/present
ADRENAL CORTICES:
-Fatty change, unilateral, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	: ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	: RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	MALE

* STATE AT NECROPSY: R1
DAYS ON TEST : 92 * ANIMAL NO. : 110
.....

* NECROPSY FINDINGS

STOMACH:
01: FUNDUS, MUCOSA: DISCOLORATION, REDDISH.
THYMUS:
01: REDUCED IN SIZE.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, focal, grade 2
KIDNEYS:
-Hyaline droplets, bilateral, grade 1
STOMACH:
-Congestion, focal
This finding corresponds to necropsy observation no: 01.
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
LUNGS:
-Vascular mineralization, focal, grade 1
THYMUS:
-Atrophy, grade 1
This finding corresponds to necropsy observation no: 01.
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
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SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 110

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PARATHYROID GLANDS:
Only one of paired organs examined/present
SCIATIC NERVE, LEFT:
-Nerve fiber degeneration, grade 1
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: R1	
DAYS ON TEST	: 92
* ANIMAL NO.	: 111

.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, grade 3
KIDNEYS:
-Tubular vacuolation, bilateral, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
EPIDIDYMIDES:
-Tubular Vacuolation, unilateral, grade 1
SUBLINGUAL GLANDS:
Only one of paired organs examined/present

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 111

.....

MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present

PARATHYROID GLANDS:
Only one of paired organs examined/present

ADRENAL CORTICES:
-Fatty change, bilateral, grade 1

SCIATIC NERVE, LEFT:
-Nerve fiber degeneration, grade 1

ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: R1	
DAYS ON TEST	: 92
	* ANIMAL NO. : 112

.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1

LIVER:
-Lymphoid cell infiltration, multifocal, grade 1
-Fatty change, grade 1

SPLEEN:
-Increased hemopoiesis, grade 1

MESENTERIC LYMPH NODE:
-Foamy histiocytes, focal, grade 1

KIDNEYS:
-Hyaline droplets, bilateral, grade 1
-Tubular vacuolation, bilateral, grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP : 04, 2000 MG/KG/DAY	MALE

CONT./FF. ANIMAL NO. : 112

PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
LUNGS:
-Vascular mineralization, focal, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
ADRENAL CORTICES:
-Fatty change, bilateral, grade 2
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: R1	
DAYS ON TEST : 92	* ANIMAL NO. : 113

* NECROPSY FINDINGS

SKIN/SUBCUTIS:
01: AURICLE, LEFT SIDE: RUPTURE(S).
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

HEART:
-lymphoid Cell infiltration, grade 1
LIVER:
-Lymphoid cell infiltration, multifocal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, grade 3

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	300/ 343
INDIVIDUAL ANIMAL DATA	RCC	:	A29553

TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY MALE

CONT./FF. ANIMAL NO. : 113

KIDNEYS:
-Tubular vacuolation, bilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
COLON:
-Luminal dilation, grade 1
THYMUS:
-Epithelial Cyst
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Only one of paired organs examined/present
ADRENAL CORTICES:
-Fatty change, bilateral, grade 2
SKIN/SUBCUTIS:
-Auric.regene.changes, grade 1
This finding corresponds to necropsy observation no: 01.
-Focal fibrosis, grade 1
This finding corresponds to necropsy observation no: 01.
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: R1	
DAYS ON TEST	: 92 * ANIMAL NO. : 114

* NECROPSY FINDINGS

THYMUS:
01: FOCUS/FOCI, SEVERAL, D=1 MM, DARK RED.
NO OTHER NECROPSY OBSERVATIONS NOTED

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	: 301/ 343
INDIVIDUAL ANIMAL DATA	RCC	: A29553

<i>TEST ARTICLE</i>	: ULTRAZINE FG-R	<i>PATHOL. NO.:</i>	11023 ROL
<i>TEST SYSTEM</i>	: RAT, 13-Week, Oral	<i>DATE</i>	: 14-FEB-07
<i>SPONSOR</i>	: DSM Nutritional Products AG	<i>PathData®System</i>	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 114

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1

LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1

SPLEEN:
-Increased hemopoiesis, grade 1

MESENTERIC LYMPH NODE:
-Foamy histiocytes, grade 3

KIDNEYS:
-Hyaline droplets, bilateral, grade 1
-Tubular basophilia, focal, unilateral, grade 1

PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1

THYMUS:
-Hemorrhage, grade 1
This finding corresponds to necropsy observation no: 01.

MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present

PARATHYROID GLANDS:
Only one of paired organs examined/present

ADRENAL CORTICES:
-Fatty change, bilateral, grade 1

HARDERIAN GLANDS:
-Porphyrin deposits, unilateral, grade 1

PITUITARY GLAND:
Tissue not present for histologic examination

ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	302/ 343
INDIVIDUAL ANIMAL DATA	RCC	:	A29553

TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	MALE

* STATE AT NECROPSY: R1
DAYS ON TEST : 92 * ANIMAL NO. : 115
.....

* NECROPSY FINDINGS

THYMUS:
01: FOCUS/FOCI, SEVERAL, D=1 MM, DARK RED.
02: REDUCED IN SIZE.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, multifocal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, focal, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
THYMUS:
-Hemorrhage, focal, grade 1
This finding corresponds to necropsy observation no: 01.
-Atrophy, focal, grade 1
This finding corresponds to necropsy observation no: 02.
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Only one of paired organs examined/present
ADRENAL CORTICES:
-Fatty change, bilateral, grade 2

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	303/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 115

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SCIATIC NERVE, LEFT:
-Nerve fiber degeneration, grade 1
HARDERIAN GLANDS:
-Porphyrin deposits, bilateral, grade 1
BRONCHIAL LYMPH NODE:
Tissue not present for histologic examination
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: R1		
DAYS ON TEST	:	92
	* ANIMAL NO. :	116

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1
LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, focal, grade 1
KIDNEYS:
-Hyaline droplets, bilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	304/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 116

PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
THYMUS:
-Epithelial Cyst
TESTES:
-Multinucleated spermatid giant cells, focal, unilateral,
grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Tissue not present for histologic examination
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: R1	
DAYS ON TEST	: 92
* ANIMAL NO. :	117

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

HEART:
-lymphoid Cell infiltration, grade 1
LIVER:
-Lymphoid cell infiltration, focal, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Foamy histiocytes, grade 3

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	305/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY MALE

CONT./FF. ANIMAL NO. : 117

KIDNEYS:
-Tubular basophilia, focal, bilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
LUNGS:
-Vascular mineralization, focal, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
ADRENAL CORTICES:
-Fatty change, bilateral, grade 1
MAMMARY GLAND:
-Adipose tissue only
PITUITARY GLAND:
-Cyst, single, pars distalis
BRONCHIAL LYMPH NODE:
Tissue not present for histologic examination
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: R1	
DAYS ON TEST	: 92 * ANIMAL NO. : 118

* NECROPSY FINDINGS
NO NECROPSY OBSERVATIONS NOTED.

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	MALE

CONT./FF. ANIMAL NO. : 118

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, focal, grade 2
KIDNEYS:
-Hyaline droplets, bilateral, grade 1
-Tubular vacuolation, bilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
RECTUM:
-Luminal dilation, grade 2
THYMUS:
-Epithelial Cyst, single
-Atrophy, focal, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
EYES:
Only one of paired organs examined/present
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT
INDIVIDUAL ANIMAL DATA

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RCC : A29553

TEST ARTICLE : ULTRAZINE FG-R
TEST SYSTEM : RAT, 13-Week, Oral
SPONSOR : DSM Nutritional Products AG

PATHOL. NO.: 11023 ROL
DATE : 14-FEB-07
PathData®System V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS
DOSE GROUP : 04, 2000 MG/KG/DAY

FEMALE

* STATE AT NECROPSY: KO
DAYS ON TEST : 93 * ANIMAL NO. : 213
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1
LIVER:
-Lymphoid cell infiltration, focal, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Foamy histiocytes, focal, grade 1
KIDNEYS:
-Mineralization, focal, bilateral, grade 1
-Tubular vacuolation, bilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Tissue not present for histologic examination
HARDERIAN GLANDS:
-Porphyrin deposits, unilateral, grade 1
UTERUS:
-Estrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	FEMALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 93 * ANIMAL NO. : 214
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Foamy histiocytes, grade 3
KIDNEYS:
-Tubular vacuolation, bilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
COLON:
-Luminal dilation, grade 1
THYMUS:
-Epithelial Cyst
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
PARATHYROID GLANDS:
Tissue not present for histologic examination
HARDERIAN GLANDS:
-Porphyrin deposits, bilateral, grade 1
UTERUS:
-Metestrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	309/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	FEMALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 93 * ANIMAL NO. : 215
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, focal, grade 2
KIDNEYS:
-Tubular vacuolation, bilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
RECTUM:
-Luminal dilation, grade 2
LUNGS:
-Vascular mineralization, focal, grade 1
THYMUS:
-Epithelial Cyst
OVARIES:
-Stromal cell hyperplasia, focal, bilateral, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Tissue not present for histologic examination
UTERUS:
-Metestrus phase of the estrous cycle

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	310/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	FEMALE

CONT./FF. ANIMAL NO. : 215

.....
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0	
DAYS ON TEST	: 93
	* ANIMAL NO. : 216

.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1
LIVER:
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 2
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, focal, grade 2
KIDNEYS:
-Tubular vacuolation, bilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
-Mineralization, grade 1
THYMUS:
-Epithelial Cyst
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	311/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	FEMALE

CONT./FF. ANIMAL NO. : 216

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PARATHYROID GLANDS:
Tissue not present for histologic examination

OPTIC NERVES:
Only one of paired organs examined/present

UTERUS:
-Diestrus phase of the estrous cycle

ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0	
DAYS ON TEST	: 93
	* ANIMAL NO. : 217

.....

* NECROPSY FINDINGS

THYMUS:
01: FOCUS/FOCI, SEVERAL, D=1 MM, DARK RED.

BODY CAVITIES:
01: UTERINE ADIPOSE TISSUE, RIGHT SIDE: NODULE(S), D=5 MM,
YELLOWISH, FIRM.

NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1

SPLEEN:
-Increased hemopoiesis, grade 1

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, grade 3

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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<i>SPONSOR</i>	:	DSM Nutritional Products AG	<i>PathData®System</i>	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY FEMALE

CONT./FF. ANIMAL NO. : 217

KIDNEYS:
-Tubular vacuolation, bilateral, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
LUNGS:
-Vascular mineralization, focal, grade 1
THYMUS:
-Epithelial Cyst
-Hemorrhage, multifocal, grade 1
This finding corresponds to necropsy observation no: 01.
OVARIES:
-Stromal cell hyperplasia, focal, bilateral, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Tissue not present for histologic examination
HARDERIAN GLANDS:
-Inflammation, focal, chronic, unilateral, grade 1
UTERUS:
-Diestrus phase of the estrous cycle
BODY CAVITIES:
Nothing abnormal discovered corresponding to necropsy observation no.01.
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	FEMALE

* STATE AT NECROPSY: KO
DAYS ON TEST : 93 * ANIMAL NO. : 218
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Hematopoiesis, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, grade 3
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
THYMUS:
-Epithelial Cyst, single
OVARIES:
-Stromal cell hyperplasia, focal, bilateral, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
UTERUS:
-Proestrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY FEMALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 93 * ANIMAL NO. : 219
.....

* NECROPSY FINDINGS

LIVER:
01: LOBE INFRAPORTALIS: NODULE(S), D=10 MM, DARK RED, FIRM.
OVARIES:
01: RIGHT SIDE: DISCOLORATION, DARK RED.
PANCREAS:
01: DISCOLORATION, DARK RED.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 2
-Necrosis, focal with hemorrhage, grade 3
This finding corresponds to necropsy observation no: 01.
SPLEEN:
-Increased hemopoiesis, grade 2
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, grade 2
KIDNEYS:
-Tubular vacuolation, bilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
COLON:
-Luminal dilation, grade 2
OVARIES:
-Stromal cell hyperplasia, focal, bilateral, grade 1
-Congestion, bilateral
This finding corresponds to necropsy observation no: 01.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	315/ 343
INDIVIDUAL ANIMAL DATA	RCC	:	A29553

TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	FEMALE

CONT./FF. ANIMAL NO. : 219

PANCREAS:
-Congestion, multifocal
This finding corresponds to necropsy observation no: 01.
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
PARATHYROID GLANDS:
Tissue not present for histologic examination
ADRENAL CORTICES:
-Fatty change, unilateral, grade 1
UTERUS:
-Estrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0	
DAYS ON TEST	: 93
* ANIMAL NO.	: 220

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1
MESENTERIC LYMPH NODE:
-Foamy histiocytes, focal, grade 1
PEYER'S PATCHES (JEJUNUM):
Tissue not present for histologic examination
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	FEMALE

CONT./FF. ANIMAL NO. : 220

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RECTUM:
-Luminal dilation, grade 2

THYMUS:
-Epithelial Cyst
-Atrophy, focal, grade 1

OVARIES:
-Stromal cell hyperplasia, focal, bilateral, grade 1

MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1

PARATHYROID GLANDS:
Tissue not present for histologic examination

HARDERIAN GLANDS:
-Atrophy, focal, unilateral, grade 1

UTERUS:
-Proestrus phase of the estrous cycle

BRONCHIAL LYMPH NODE:
-Blood in sinuses, grade 3

ZYMBAL'S GLANDS:
Tissue not present for histologic examination

ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0		
DAYS ON TEST	:	93
		* ANIMAL NO. : 221

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* NECROPSY FINDINGS

THYMUS:
01: FOCUS/FOCI, SEVERAL, D=1 MM, DARK RED.
NO OTHER NECROPSY OBSERVATIONS NOTED

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	FEMALE

CONT./FF. ANIMAL NO. : 221

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1
LIVER:
-Lymphoid cell infiltration, focal, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
KIDNEYS:
-Mineralization, focal, unilateral, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
LUNGS:
-Vascular mineralization, focal, grade 1
THYMUS:
-Epithelial Cyst
-Congestion, multifocal
This finding corresponds to necropsy observation no: 01.
OVARIES:
-Stromal cell hyperplasia, focal, bilateral, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Only one of paired organs examined/present
SCIATIC NERVE, LEFT:
-Nerve fiber degeneration, grade 1
HARDERIAN GLANDS:
-Inflammation, multifocal, chronic, bilateral, grade 1
UTERUS:
-Metestrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY FEMALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 93 * ANIMAL NO. : 222
.....

* NECROPSY FINDINGS

THYMUS:
01: FOCUS/FOCI, SEVERAL, D=1 MM, DARK RED.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Foamy histiocytes, grade 3
LUNGS:
-Vascular mineralization, focal, grade 1
THYMUS:
-Epithelial Cyst
-Hemorrhage, multifocal, grade 1
This finding corresponds to necropsy observation no: 01.
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
PARATHYROID GLANDS:
Tissue not present for histologic examination
UTERUS:
-Diestrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY FEMALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 94 * ANIMAL NO. : 223
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1
LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Foamy histiocytes, grade 2
KIDNEYS:
-Mineralization, focal, unilateral, grade 1
-Tubular vacuolation, bilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
OVARIES:
-Stromal cell hyperplasia, focal, bilateral, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Only one of paired organs examined/present
SCIATIC NERVE, LEFT:
-Nerve fiber degeneration, grade 1
UTERUS:
-Estrus phase of the estrous cycle

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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SPONSOR	: DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP : 04, 2000 MG/KG/DAY	FEMALE

CONT./FF. ANIMAL NO. : 223

ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0	
DAYS ON TEST : 94	* ANIMAL NO. : 224

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Foamy histiocytes, focal, grade 1
KIDNEYS:
-Mineralization, focal, unilateral, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
THYMUS:
-Epithelial Cyst
OVARIES:
-Stromal cell hyperplasia, focal, bilateral, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Only one of paired organs examined/present

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY FEMALE

CONT./FF. ANIMAL NO. : 224

ADRENAL CORTICES:
-Mineralization, focal, unilateral, grade 2
HARDERIAN GLANDS:
-Porphyrin deposits, bilateral, grade 1
UTERUS:
-Metestrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0	
DAYS ON TEST	: 94 * ANIMAL NO. : 225

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1
MESENTERIC LYMPH NODE:
-Foamy histiocytes, grade 2
KIDNEYS:
-Mineralization, focal, unilateral, grade 1
-Tubular vacuolation, bilateral, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
COLON:
-Luminal dilation, grade 1
LUNGS:
-Alveolar histiocytosis, focal, grade 1

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RCC STUDY NUMBER A29553 REPORT
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TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY FEMALE

CONT./FF. ANIMAL NO. : 225

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OVARIES:
-Stromal cell hyperplasia, focal, bilateral, grade 1
SUBLINGUAL GLANDS:
Tissue not present for histologic examination
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
UTERUS:
-Diestrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

.....

* STATE AT NECROPSY: K0		
DAYS ON TEST	:	94 * ANIMAL NO. : 226

.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Foamy histiocytes, grade 2
KIDNEYS:
-Tubular vacuolation, bilateral, grade 1
LUNGS:
-Vascular mineralization, focal, grade 1

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RCC STUDY NUMBER A29553 REPORT
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SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	FEMALE

CONT./FF. ANIMAL NO. : 226

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MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Tissue not present for histologic examination
UTERUS:
-Metestrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0	
DAYS ON TEST	: 94
	* ANIMAL NO. : 227

.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 2
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Foamy histiocytes, focal, grade 2
KIDNEYS:
-Tubular vacuolation, bilateral, grade 1
URINARY BLADDER:
Tissue not present for histologic examination
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1

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RCC STUDY NUMBER A29553 REPORT
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TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY FEMALE

CONT./FF. ANIMAL NO. : 227

PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
OVARIES:
-Stromal cell hyperplasia, focal, bilateral, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Tissue not present for histologic examination
SCIATIC NERVE, LEFT:
-Nerve fiber degeneration, grade 1
HARDERIAN GLANDS:
-Inflammation, focal, chronic, unilateral, grade 1
UTERUS:
-Estrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0	
DAYS ON TEST	: 94 * ANIMAL NO. : 228

* NECROPSY FINDINGS

THYMUS:
01: FOCUS/FOCI, ISOLATED, D=1 MM, DARK RED.
NO OTHER NECROPSY OBSERVATIONS NOTED

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RCC STUDY NUMBER A29553 REPORT
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SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY FEMALE

CONT./FF. ANIMAL NO. : 228

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1
LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 2
MESENTERIC LYMPH NODE:
-Foamy histiocytes, grade 1
KIDNEYS:
-Mineralization, focal, unilateral, grade 1
THYMUS:
-Epithelial Cyst
-Hemorrhage, focal, grade 1
This finding corresponds to necropsy observation no: 01.
-Atrophy, focal, grade 1
OVARIES:
-Stromal cell hyperplasia, focal, bilateral, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Tissue not present for histologic examination
HARDERIAN GLANDS:
-Porphyrin deposits, unilateral, grade 1
UTERUS:
-Estrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	FEMALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 94 * ANIMAL NO. : 229
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1

LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Hematopoiesis, focal, grade 1

SPLEEN:
-Increased hemopoiesis, grade 1

MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, grade 3

KIDNEYS:
-Mineralization, focal, bilateral, grade 1
-Tubular vacuolation, bilateral, grade 1

PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1

LUNGS:
-Vascular mineralization, focal, grade 1

THYMUS:
-Epithelial Cyst, single

OVARIES:
-Stromal cell hyperplasia, focal, unilateral, grade 1

MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1

HARDERIAN GLANDS:
-Porphyrin deposits, unilateral, grade 1

UTERUS:
-Diestrus phase of the estrous cycle

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RCC STUDY NUMBER A29553 REPORT
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SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	FEMALE

CONT./FF. ANIMAL NO. : 229

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ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0	
DAYS ON TEST	: 94
	* ANIMAL NO. : 230

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* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1
LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Hematopoiesis, focal, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Foamy histiocytes, grade 3
KIDNEYS:
-Mineralization, focal, bilateral, grade 1
-Tubular vacuolation, bilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
LUNGS:
-Vascular mineralization, focal, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1

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RCC STUDY NUMBER A29553 REPORT
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TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	FEMALE

CONT./FF. ANIMAL NO. : 230

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PARATHYROID GLANDS:
Only one of paired organs examined/present

SCIATIC NERVE, LEFT:
-Nerve fiber degeneration, grade 1

UTERUS:
-Proestrus phase of the estrous cycle

ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: K0	
DAYS ON TEST	: 94
	* ANIMAL NO. : 231

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* NECROPSY FINDINGS

THYMUS:
01: DISCOLORATION, DARK RED.

SKIN/SUBCUTIS:
01: TIP OF TAIL: DEJECTED.

NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Hematopoiesis, focal, grade 1
-Fatty change, grade 1

SPLEEN:
-Increased hemopoiesis, grade 2

MESENTERIC LYMPH NODE:
-Foamy histiocytes, grade 3

KIDNEYS:
-Mineralization, focal, bilateral, grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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<i>TEST SYSTEM</i>	: RAT, 13-Week, Oral	<i>DATE</i>	: 14-FEB-07
<i>SPONSOR</i>	: DSM Nutritional Products AG	<i>PathData®System</i>	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY FEMALE

CONT./FF. ANIMAL NO. : 231

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PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
RECTUM:
-Luminal dilation, grade 1
THYMUS:
-Epithelial Cyst
-Congestion, diffuse
This finding corresponds to necropsy observation no: 01.
-Atrophy, diffuse, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
PARATHYROID GLANDS:
Tissue not present for histologic examination
ADRENAL MEDULLAS:
Only one of paired organs examined/present
SKIN/SUBCUTIS:
-Tail, bone atrophy, grade 1
This finding corresponds to necropsy observation no: 01.
UTERUS:
-Diestrus phase of the estrous cycle
BRONCHIAL LYMPH NODE:
Tissue not present for histologic examination
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	FEMALE

* STATE AT NECROPSY: K0
DAYS ON TEST : 94 * ANIMAL NO. : 232
.....

* NECROPSY FINDINGS

SKIN/SUBCUTIS:
01: FORELEG, BOTH SIDES: ALOPECIA, D=20X10 MM, MARKED.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1
LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Hematopoiesis, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Foamy histiocytes, grade 1
KIDNEYS:
-Tubular vacuolation, bilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
THYMUS:
-Epithelial Cyst
OVARIES:
-Stromal cell hyperplasia, focal, bilateral, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
ADRENAL CORTICES:
-Fatty change, focal, unilateral, grade 1
SKIN/SUBCUTIS:
-Hair follicle atrophy, grade 3
This finding corresponds to necropsy observation no: 01.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	331/ 343
INDIVIDUAL ANIMAL DATA	RCC	:	A29553

TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	FEMALE

CONT./FF. ANIMAL NO. : 232

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UTERUS:
-Estrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: R1	
DAYS ON TEST	: 92
	* ANIMAL NO. : 233

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* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Foamy histiocytes, focal, grade 2
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
COLON:
-Luminal dilation, grade 1
THYMUS:
-Epithelial Cyst
OVARIES:
-Stromal cell hyperplasia, focal, bilateral, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY FEMALE

CONT./FF. ANIMAL NO. : 233

PARATHYROID GLANDS:
Only one of paired organs examined/present
ADRENAL CORTICES:
-Fatty change, bilateral, grade 1
OPTIC NERVES:
Only one of paired organs examined/present
UTERUS:
-Proestrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: R1		
DAYS ON TEST	:	92 * ANIMAL NO. : 234

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Foamy histiocytes, grade 3
OVARIES:
-Stromal cell hyperplasia, focal, bilateral, grade 2
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY FEMALE

CONT./FF. ANIMAL NO. : 234

PARATHYROID GLANDS:
Only one of paired organs examined/present
SCIATIC NERVE, LEFT:
-Nerve fiber degeneration, grade 1
OPTIC NERVES:
Only one of paired organs examined/present
UTERUS:
-Estrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: R1	
DAYS ON TEST	: 92 * ANIMAL NO. : 235

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

TRACHEA:
-Glandular ectasia, grade 1
LIVER:
-Lymphoid cell infiltration, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, focal, grade 1
KIDNEYS:
-Pyelitis, chronic, purulent, unilateral, grade 3
-Transitional cell hyperplasia, multifocal, reactive, unilateral,

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY FEMALE

CONT./FF. ANIMAL NO. : 235

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grade 3
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
OVARIES:
-Stromal cell hyperplasia, focal, bilateral, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Only one of paired organs examined/present
UTERUS:
-Metestrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: R1	
DAYS ON TEST	: 92 * ANIMAL NO. : 236

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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<i>TEST SYSTEM</i>	:	RAT, 13-Week, Oral	<i>DATE</i>	: 14-FEB-07
<i>SPONSOR</i>	:	DSM Nutritional Products AG	<i>PathData®System</i>	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	FEMALE

CONT./FF. ANIMAL NO. : 236

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MESENTERIC LYMPH NODE:
-Foamy histiocytes, focal, grade 1

KIDNEYS:
-Mineralization, focal, bilateral, grade 1

STOMACH:
-Glandular stomach erosion, focal, grade 1

COLON:
-Luminal dilation, grade 1

RECTUM:
-Luminal dilation, grade 1

LUNGS:
-Vascular mineralization, focal, grade 1

THYMUS:
-Epithelial Cyst, single

OVARIES:
-Stromal cell hyperplasia, focal, bilateral, grade 1

MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1

PARATHYROID GLANDS:
Only one of paired organs examined/present

UTERUS:
-Proestrus phase of the estrous cycle

ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	FEMALE

* STATE AT NECROPSY: R1
DAYS ON TEST : 92 * ANIMAL NO. : 237
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Foamy histiocytes, grade 3
KIDNEYS:
-Mineralization, focal, bilateral, grade 1
-Tubular vacuolation, bilateral, grade 1
COLON:
-Luminal dilation, grade 1
OVARIES:
-Stromal cell hyperplasia, focal, bilateral, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
UTERUS:
-Proestrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	FEMALE

* STATE AT NECROPSY: R1
DAYS ON TEST : 92 * ANIMAL NO. : 238
.....

* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 2
MESENTERIC LYMPH NODE:
-Foamy histiocytes, focal, grade 1
KIDNEYS:
-Tubular vacuolation, bilateral, grade 1
COLON:
-Luminal dilation, grade 1
RECTUM:
-Luminal dilation, grade 2
THYMUS:
-Epithelial Cyst
OVARIES:
-Stromal cell hyperplasia, focal, bilateral, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Only one of paired organs examined/present
UTERUS:
-Metestrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	FEMALE

* STATE AT NECROPSY: R1
DAYS ON TEST : 92 * ANIMAL NO. : 239
.....

* NECROPSY FINDINGS

THYMUS:
01: REDUCED IN SIZE.
NO OTHER NECROPSY OBSERVATIONS NOTED

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, grade 1
-Fatty change, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, focal, grade 2
KIDNEYS:
-Mineralization, focal, bilateral, grade 1
-Tubular vacuolation, bilateral, grade 1
PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
COLON:
-Luminal dilation, grade 1
THYMUS:
Nothing abnormal discovered corresponding to necropsy observation no.01.
-Epithelial Cyst
OVARIES:
-Stromal cell hyperplasia, focal, unilateral, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Tissue not present for histologic examination

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	FEMALE

CONT./FF. ANIMAL NO. : 239

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SCIATIC NERVE, LEFT:
-Nerve fiber degeneration, grade 1
HARDERIAN GLANDS:
-Inflammation, focal, chronic, unilateral, grade 1
SKELETAL MUSCLE:
-Lymphoid cell infiltration, focal, grade 1
UTERUS:
-Metestrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: R1	
DAYS ON TEST	: 92
	* ANIMAL NO. : 240

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* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, focal, grade 1
KIDNEYS:
-Tubular vacuolation, bilateral, grade 1
PEYER'S PATCHES (JEJUNUM):
-Lymphoid Hyperplasia, grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY FEMALE

CONT./FF. ANIMAL NO. : 240

PEYER'S PATCHES (ILEUM):
-Lymphoid Hyperplasia, grade 1
COLON:
-Luminal dilation, grade 1
RECTUM:
-Luminal dilation, grade 3
THYMUS:
-Epithelial Cyst
OVARIES:
-Stromal cell hyperplasia, focal, bilateral, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
PARATHYROID GLANDS:
Only one of paired organs examined/present
HARDERIAN GLANDS:
-Porphyrin deposits, unilateral, grade 1
UTERUS:
-Diestrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

* STATE AT NECROPSY: R1	
DAYS ON TEST	: 92 * ANIMAL NO. : 241

* NECROPSY FINDINGS

THYMUS:
01: DISCOLORATION, DARK RED.
MANDIBULAR LYMPH NODES:
01: DISCOLORATION, REDDISH.
NO OTHER NECROPSY OBSERVATIONS NOTED

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	FEMALE

CONT./FF. ANIMAL NO. : 241

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, focal, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, grade 3
KIDNEYS:
-Mineralization, focal, unilateral, grade 1
THYMUS:
-Epithelial Cyst
-Hemorrhage, grade 2
This finding corresponds to necropsy observation no: 01.
-Atrophy, grade 1
OVARIES:
-Stromal cell hyperplasia, focal, bilateral, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
-Congestion, diffuse, unilateral
This finding corresponds to necropsy observation no: 01.
PARATHYROID GLANDS:
Only one of paired organs examined/present
ADRENAL CORTICES:
-Fatty change, unilateral, grade 1
ADRENAL MEDULLAS:
Only one of paired organs examined/present
UTERUS:
-Metestrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

PATHOLOGY REPORT	PAGE	:	342/ 343
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TEST ARTICLE	:	ULTRAZINE FG-R	PATHOL. NO.:	11023 ROL
TEST SYSTEM	:	RAT, 13-Week, Oral	DATE	: 14-FEB-07
SPONSOR	:	DSM Nutritional Products AG	PathData®System	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP	: 04, 2000 MG/KG/DAY
	FEMALE

* STATE AT NECROPSY: R1
DAYS ON TEST : 92 * ANIMAL NO. : 242
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* NECROPSY FINDINGS

NO NECROPSY OBSERVATIONS NOTED.

* MICROSCOPIC FINDINGS

LIVER:
-Lymphoid cell infiltration, grade 1
SPLEEN:
-Increased hemopoiesis, grade 1
MESENTERIC LYMPH NODE:
-Lymphoid hyperplasia, grade 1
-Foamy histiocytes, focal, grade 1
KIDNEYS:
-Tubular vacuolation, bilateral, grade 1
COLON:
-Luminal dilation, grade 1
LUNGS:
-Vascular mineralization, focal, grade 1
THYMUS:
-Epithelial Cyst
OVARIES:
-Stromal cell hyperplasia, focal, unilateral, grade 1
MANDIBULAR LYMPH NODES:
Only one of paired organs examined/present
-Lymphoid Hyperplasia, unilateral, grade 1
THYROID GLAND (BOTH LOBES):
-Thymic ectopia, focal, bilateral
PARATHYROID GLANDS:
Only one of paired organs examined/present
SCIATIC NERVE, LEFT:
-Nerve fiber degeneration, grade 1
HARDERIAN GLANDS:
-Porphyrin deposits, bilateral, grade 1

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RCC STUDY NUMBER A29553 REPORT
ULTRAZINE FG-R (FOOD GRADE LIGNOSULPHONATE)

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<i>SPONSOR</i>	:	DSM Nutritional Products AG	<i>PathData®System</i>	V6.2b5

TEXT OF GROSS AND MICROSCOPIC FINDINGS	
DOSE GROUP : 04, 2000 MG/KG/DAY	FEMALE

CONT./FF. ANIMAL NO. : 242

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UTERUS:
-Diestrus phase of the estrous cycle
ALL OTHER PROTOCOL TISSUES WITHOUT PATHOLOGIC FINDINGS.

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