



Allergen Database for Food Safety

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Allergenicity Prediction: FAO/WHO method

A [report](#) from a Joint FAO/WHO Expert Consultation on Foods Derived from Biotechnology proposed that cross-reactivity between a query protein and a known allergen has to be considered when there is 1) more than 35% identity in the amino acid sequence of the expressed protein, using a window of 80 amino acids and a suitable gap penalty, or 2) identity of 6 contiguous amino acids.

Using the FAO/WHO allergenicity prediction in our site, you can analyze the potential allergenicity of your query protein according to the two criteria above.

It should be noted that the prediction results will not necessarily indicate that your query protein has an allergenicity

Enter your protein sequence

```
ALTTQTGATWGLGSISHKGESSTSYVYDSSAGEGTYGYVVDTGINVDHSEFGGRASLAYNAVGGQHVDV
GHGTHVAGTIGGKTYGVSKKANLLSVKVFQGESSTSIILDGYNWAANDIVSKSRTGKAAINLSLGGGYS
YAFNQAVENAFDEGLTVVAAGNENSAGNTSPASAPNALTVAASTNRNARASFNYGSSVVDVFAPGQDI
KSAWIGGSSATNTISGTSMATPHIVGLAIYLALEGLTSPAAVTKRIKELATSGVVTDVKGSPNLLAYNG
AA
```

☐ Do a full fasta alignment

Identity % or more , out of window size : AA or more

Expect value for FASTA Program :

☒ Look for a small exact wordmatch

Identity contiguous AA



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Exact wordmatch result

Match	Description (from UniProt)	No of exact Wordmatch	Detailed result
ADFS B0L807 Clac ?	SubName: Full=Vacuolar serine protease; Flags: Fragment;	1	show result
ADFS B7ZK61 Clah ?	SubName: Full=Vacuolar serine protease;	1	show result
ADFS P00780 Bac l ?	RecName: Full=Subtilisin Carlsberg; EC=3.4.21.62; Flags: Precursor;	1	show result
ADFS P12547 Asp o 13	RecName: Full=Alkaline protease 1; Short=ALP; EC=3.4.21.63; AltName: Full=Aspergillopeptidase B; AltName: Full=Aspergillus proteinase B; AltName: Full=Elastase; AltName: Full=Elastinolytic serine proteinase; AltName: Full=Oryzin; Flags: Precursor;	8	show result
ADFS P29600 Bac l ?	RecName: Full=Subtilisin Savinase; EC=3.4.21.62; AltName: Full=Alkaline protease;	2	show result
ADFS P33295 Asp n ?	RecName: Full=Subtilisin-like serine protease pepC; EC=3.4.21.-; Flags: Precursor;	1	show result
ADFS P87184 Asp f 18	RecName: Full=Alkaline protease 2; Short=ALP2; EC=3.4.21.63; AltName: Full=Autophagic serine protease alp2; AltName: Allergen=Asp f 18; Flags: Precursor;	2	show result
ADFS Q45521 Bac sp ?	SubName: Full=Prepro AprM; Flags: Precursor;	2	show result
	RecName:		

ADFS Q8J077 tri m 2	Full=Subtilisin-like protease 6; EC=3.4.21.-; AltName: Allergen=Tri m 2; Flags: Precursor; Fragment;	1	show result
ADFS Q8J1M0 tri m 2	SubName: Full=Tri m 2 allergen; Flags: Fragment;	1	show result
ADFS Q8J1M1 tri m 2	SubName: Full=Tri m 2 allergen; Flags: Fragment;	1	show result
ADFS Q9F943 Bac l ?	SubName: Full=Subtilisin; EC=3.4.21.62; Flags: Precursor; Fragment;	1	show result
ADFS Q9HF04 Pen ch 18	SubName: Full=Vacuolar serine protease;	1	show result
ADFS Q9HF11 Pen c ?	SubName: Full=Vacuolar serine protease; Flags: Fragment;	1	show result
ADFS Q9HF12 Pen o 18	SubName: Full=Vacuolar serine protease;	1	show result
ADFS Q9P8G3 Pen ch 18	SubName: Full=Allergen Pen n 18;	1	show result
ADFS Q9UVU3 Asp fl 1	SubName: Full=Allergen Asp fl 1; EC=3.4.21.63;	8	show result
ADFS Q9UW97 Tri r 2	RecName: Full=Subtilisin-like protease 6; EC=3.4.21.-; AltName: Allergen=Tri r 2; Flags: Precursor;	1	show result
ADFS Q9Y755 Pen c 2	SubName: Full=Alkaline serine protease Pen c2; EC=3.4.21.-;	1	show result



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```
ALTTQTGATWGLGSISHKGESSTSYVYDSSAGEGTYGYVDTGINVDHSEFGGRASLAYNAVGGQHVDVS
GHGTHVAGTIGGKTYGVSKKANLLSVKVFQGESSTSIILDGYNWAANDIVSKSRTGKAAINLSLGGGYS
YAFNQAVENAFDEGLTVVAAGNENSAGNTSPASAPNALTVAASTNRNARASFNYGVSVDVFAPGQDI
KSAWIGGSSATNTISGTSMATPHIVGLA1YLQALEGLTSPAAVTKRIKELATSGVVTDVKGSPNLLAYNG
AA
```

☒ Do a full fasta alignment

Identity % or more , out of window size : AA or more

Expect value for FASTA Program :

☐ Look for a small exact wordmatch

Identity contiguous AA



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Allergenicity Prediction Result(open fasta output)

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Low Mol Wt Allergens

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Match	Description(from swissprot)
adfs P12547 Asp_o_13	RecName: Full=Alkaline protease 1; Short=ALP; EC=3.4.21.63; AltName: Full=Aspergillopeptidase B; AltName: Full=A
adfs Q9UVU3 Asp_fl_1	SubName: Full=Allergen Asp fl 1; EC=3.4.21.63;
adfs Q8NKG0 Pen_ch_13	SubName: Full=Alkaline serine protease;
adfs Q9URR2 Pen_ch_13	SubName: Full=Allergen Pen n 13; EC=3.4.21.-;
adfs Q9Y749 Pen_c_1	SubName: Full=Pen c 1;
adfs Q9UW97 Tri_r_2	RecName: Full=Subtilisin-like protease 6; EC=3.4.21.-; AltName: Allergen=Tri r 2; Flags: Precursor;
adfs Q8J1M0 tri_m_2	SubName: Full=Tri m 2 allergen; Flags: Fragment;
adfs Q8J1M1 tri_m_2	SubName: Full=Tri m 2 allergen; Flags: Fragment;
adfs Q8J077 Tri_m_2	RecName: Full=Subtilisin-like protease 6; EC=3.4.21.-; AltName: Allergen=Tri m 2; Flags: Precursor; Fragment;
adfs Q9HF11 Pen_c_?	SubName: Full=Vacuolar serine protease; Flags: Fragment;
adfs Q32ZM1 Rho_m_2.0101	SubName: Full=Vacuolar serine protease; Flags: Fragment;
adfs Q9P8G3 Pen_ch_18	SubName: Full=Allergen Pen n 18;
adfs Q9HF04 Pen_ch_18	SubName: Full=Vacuolar serine protease;
adfs B0L807 Cla_c_?	SubName: Full=Vacuolar serine protease; Flags: Fragment;
adfs Q9HF12 Pen_o_18	SubName: Full=Vacuolar serine protease;
adfs Q9Y755 Pen_c_2	SubName: Full=Alkaline serine protease Pen c2; EC=3.4.21.-;
adfs B7ZK61 Cla_h_?	SubName: Full=Vacuolar serine protease;
adfs P87184 Asp_f_18	RecName: Full=Alkaline protease 2; Short=ALP2; EC=3.4.21.63; AltName: Full=Autophagic serine protease alp2; AltN
adfs P33295 Asp_n_?	RecName: Full=Subtilisin-like serine protease pepC; EC=3.4.21.-; Flags: Precursor;
adfs P29600 Bac_l_?	RecName: Full=Subtilisin Savinase; EC=3.4.21.62; AltName: Full=Alkaline protease;
adfs P00780 Bac_l_?	RecName: Full=Subtilisin Carlsberg; EC=3.4.21.62; Flags: Precursor;
adfs Q9F943 Bac_l_?	SubName: Full=Subtilisin; EC=3.4.21.62; Flags: Precursor; Fragment;
adfs Q45521 Bac_sp_?	SubName: Full=Prepro AprM; Flags: Precursor;
adfs Q39547 Cuc_m_1	RecName: Full=Cucumisin; EC=3.4.21.25; AltName: Allergen=Cuc m 1; Flags: Precursor;

> adfs|P12547|Asp o 13 RecName: Full=Alkaline protease 1; Short=ALP; EC=3.4.21.63; AltName: Full=Aspergillopeptidase B; AltName: Full=Asperg

Length = 281 Identity = 80.8 E-Value = 9.7e-105
Query = 2-282 Subject = 123-403

Query : LTTQTGATWGLGSLSHKGE SSTSYYVDDSSAGEGTGYVYVDTG I NVDHSEFGGRASLAYNAVGGQHVDSVGHGTHWAGT I GKGTYGVSKKAMLSVKVFGQSSSTS I ILOGYNWAAND IYSK S RTGKA I N L
 Subject : LTTKASAPWGLCSLSHKGGQSTDY IYDTAGEGTAYVYVDSGVNVHDEEFFGRASKAYNAVGGQHVDS I GHGTHVSGT IAGKTYG IAKKAS I SVKVFQGESSTSV I ILOGFNWAAND IYSKRTSKAA I NMSL

To the top of the window

```
> adfs|Q9UVU3|Asp fl 1 SubName: Full=Allergen Asp fl 1: EC=3.4.21.63:
```

Length = 281 Identity = 80.4 E-Value = 2.3e-104
Query = 2-282 Subject = 123-403

Query : LTTQTGATWGLGSLSHKG E SSTSYVDDVSAGEGTGYGVVDTG I NVHSEFGGRASLAYNAVGGQHVDSVGHGTHVAGT I GKGTYGVSKAMLLSVKVFQGESSTSY I LDGYNWAAND I VSKS RTGKAA I NL
Subject : LTTQKAPWGLGSLSHKGQSTDY I YTSAGEGTAYVVDVSGNVNDEHEFFGRASKAYNAAGGQHVDS I GHGTHVSGT I AGTKTY I AKKAS ILSVKVFQGESSTSY I LDGYNWAAND I VSKKRTSKAA I NMSL

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> adfs|Q8NKG0|Pen ch 13 SubName: Full=Alkaline serine protease:

Length = 273 Identity = 51.6 E-Value = 1.9e-59
Query = 9-280 Subject = 125-394

Query: TWGLGSI SHKGESSYVYVDSAGGEGTYGVVDGTGINVDHSEFGGRASLAYNAVGGQHVDSVGHGTHWAGTIGKGTGYGVSKKANLLSVKVFQGESST-SILDGYNWAANDIVSKSRITGKAAINLSLGGGYSY
 Subject: SWGLSRISSKSGGATDYVDSAGGIVLYGVDTGIDIGHADFGGRAEFGTNTAANDDTDGNHGHTHTASTAAGSKFGVAKKASVAVYKVLGADGGSTNSOIVAGMDVAWVKDSKRGATGSKVMMSLGGAYSRA

To the top of the window

```
> adfs|Q9URR2|Pen ch 13 SubName: Full=Allergen Pen n 13: EC=3.4.21.-:
```

Length = 273 Identity = 50.2 E-Value = 4.5e-57
Query = 9-280 Subject = 125-394

Query: TWGLGSGSHKSGESSTVYVDSAGEGTGYVVDGTVNDVHSEFGGRSLAYNAVGGQHVDSYGHGTHVAGTIGKGTGYGSKKANLSSVKVFGQESSST-SILDGNVNAANDIVSKSRGTGKAAINLSLGGGYSY
Subject: SWGLARISSKRTGTSVTVYDSTAGEGVVYGVDTGIDISHSDPFGGRAKWGTNVVNDNTDGMGHGHTTASTAAGSKYGVAKKALTAVYKVLGADGSGTNSGVISGMDVAVKAKSRGANGKYYMNTSLGGEFSK

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```
> adfs|Q9Y749|Pen c 1 SubName: Full=Pen c 1:
```

Length = 273 Identity = 49.8 E-Value = 5.3e-57
Query = 9-280 Subject = 125-394

3 21 3 3 4 1 5 2 5 11 1 5111 3 31 3 111 1 2 11 2 1 41
 Query : TWGLGSI SHKGESSTSVYVDSAGEGTGYVVDGTGIVNDHSEFGGRASLAYNAVGGQHVDSVGHGTHWAGTIGGKTYGVSKKANLLSVKVFQGESST-SILDGYNWAANDIVSKSRRTGKAAINLSLGGGYSY
 Subject : SWGLARISSKRTGITSVYVDSAGEGVYVDGTGIDISHSDGGRAKWGTNVVNDNTDGNHGHTHTASTAAGSKYGVAKKATVYKVKVLGADGGSTNSGVISGMDNAVKKAKSRGANGKYMMMSLGGFEESK

To the top of the window

> adfs|Q9UW97|Tri_r_2 RecName: Full=Subtilisin-like protease 6; EC=3.4.21.-; AltName: Allergen=Tri r 2; Flags: Precursor;

Length = 279 Identity = 45.9 E-Value = 1.7e-51
Query = 9-281 Subject = 135-410

Query: TWGLGSISHKGEESTSVYVDVDSAGEGTGYVVDGTGINVDHSEFGGRASLAYNAVGGQHVDSVGHGTHVAGTIGKGTGYGSKKANLLSVKVGFGQSS-STSILDGYNWANDIV-----SKSRTKGAAILNSLGL
 Subject: SWGLARVGSKKPGGTITTYVDSAGKGTAYI|DTGID|DHEDFGGRAKWGENFVDQNTDCNMGHTHVAGTGYGTGYKGLAKGVS|YAVKVLDCDGGSGNSGV|KGMWAMRQASGGCGNTAKAAGKSVNNMSLGL

To the top of the window

```
> adfs|Q8J1M0|tri m 2 SubName: Full=Tri m 2 allergen; Flags: Fragment;
```

Length = 275 Identity = 46.2 E-Value = 4.2e-50
Query = 9-278 Subject = 133-404

Query: TWGLGSI SHKGESSTSYVYDSSAGEGTYGYVVDTG I NVDSHFEGGRASLAYNAVGGQHVDSYVGHGTHVAGTI GKGTYGVSKKANLLSVKVFQGE-SSSTS I LDGYNWAAND I VSKSRTGKAA----INLSLGGG
Subject: SWGLI ARVGSQKAGGTTTYYDSSACKGVTAY I DTG I D I FHFDFGGRAKWCKNFVDORDEDNCHGTHVAGTYVGTEKYLAKSVSLVAVKVLDCDGGSGNSGVIRGMEAWMAREASGGNGTAKAAGKSVMMSLGG

To the top of the window

```
> adfs|Q8J1M1|tri m 2 SubName: Full=Tri m 2 allergen; Flags: Fragment:
```

Length = 263 Identity = 47.1 E-Value = 5e-50
Query = 9-265 Subject = 31-290

Query: TWGLGSI SHKGESSTSVYVDSSAGGEGTYGYVVDGTGINVDHSEFGGRASLAYNAVGGQHVDSVGHGTHVAGTIGGKTYGVSKKANLLSVKVFQGE-SSSTSILDGYNWAANDIV-----SKRSRTGKAAI NLSLGG
Subject: SWGLARVSGSKAGGTTTYYDSSAGGVTAYI IDTGDI NHEDFGGRAKWCKNEVDKMDENCGHGTTHVAGTYGGTKYGLAGVTLVAVKVLDCDGGSGNSGVIEGMEWAMREASGGGNGTAKAAGKAVINMSLGG

To the top of the window

> adfs|Q8J077|Tri_m_2 RecName: Full=Subtilisin-like protease 6; EC=3.4.21.-; AltName: Allergen=Tri m 2; Flags: Precursor, Fragment;

Length = 276 Identity = 45.3 E-Value = 1.4e-49
Query = 9-278 Subject = 133-405

Query : TWGLGSISHKGESSTSVYVDSSAGGEGTYGYVVDTGIVNDHSEFGGRASLAYNAVGQHVDSVGHGTHVAGTIGGKTYGVSKKANLLSVKVFQGE--SSSTSILDGYNWAANDIV-----SKSRGTGKAAILNSLGG
Subject : SWGLARVGSQKAGGTTTTYDSSAGKGVTAYVIDTGIDFHEDFGGRAKWKNVFDORDDCNMGHTHVAGTVGGTKYGLAKSVSLVAVKVICDGCSCNSGVIRCFWFAMRFASGGNGCTAKAAGKSVNNMISGL

To the top of the window

> adfs|Q9HF11|Pen c ? SubName: Full=Vacuolar serine protease; Flags: Fragment:

Length = 299 Identity = 47.2 E-Value = 2.2e-46
Query = 3-280 Subject = 4-302

Query : TTQTGATWGLGSISLHKGESS-----TSYVYDSSAGETGYGVVDGTGINVDHSEFGGRASLAYNAV-GGQHVDSVGHGTHVAGTIGGKTGYGSKKANLSVKVQFGESSST-SILDGYNWAANDIVYSKRTKG-----
Subject : SVEKNAWPGLARISHRDSISGTEFNKVIYAFDGGCGVDAYVIDTGTINTDHDVDFGRANWGKTIPEFDGVDNCGHGTCHSCGTIACKYGVAAKKNVYAVKVISRNCSTGMSDVVKGVVFWAFAAFKHKAKAKGCGK

To the top of the window

> adfs|Q32ZM1|Rho m.2.0101 SubName: Full=Vacuolar serine protease; Flags: Fragment;

Length = 301 Identity = 45.5 E-Value = 4.1e-44
Query = 2-281 Subject = 32-332

Query: LTTQTGATWGLGSLSHKGESSTSYVYVDYSAGECTGYVVDGTGIVNDHSEFGGRASLAYNAVGGQHVDSVGHGTHVAGTIGGKTYGVSKKANLLSVKVFQGESSSTSIILDGYNWAAADIVYSKRT
Subject: FTVAKGAPWGLARISHRDLSLGSEFDYLDYSGNGGTGTSYVIDTGVNVHHCQFEGRAKWKGTIPGDEDEDDGNGHGHTCAGTIGSNAYGVAKNAIVAVKVLRSNCGSCMSDVIKGVFEFAVSKHSDQSVKKGK

To the top of the window

```
> adfs|Q9P8G3|Pen ch 18 SubName: Full=Allergen Pen n 18:
```

Length = 299 Identity = 45.2 E-Value = 5.9e-44
Query = 3-280 Subject = 140-438

Query : TTQTGATWGLGSISLHKGESS-----TSYVYDSSAGETGYGVVDTG|INVDSHFEGGRASLAYNAV--GGHVDVSVGHGTHVAGT|IGGKTGYGSKKANLLSVKVFQGESST--S|ILDGYNWAAND|VSKSRTG-----
 Subject : SVEKNAWPGLAR|SHRESLSFGNFKNLYAEEGGEGDVAIV|DTGANVKHVDFEGRANWGKT|PGDADGDNHGHTGCSGT|ACKKFGVAKKANVYAVKV|RNSGCSGMSDVKVGVFWAAFAH|KSKSKGCKDKK|

To the top of the window

Length = 299 Identity = 45.2 E-Value = 5.9e-44
Query = 3-280 Subject = 140-438

To the top of the window

Length = 301 Identity = 45.2 E-Value = 2.7e-26
Query = 5-280 Subject = 14-314

To the top of the window

Length = 301 Identity = 47.5 E-Value = 3e-26
Query = 5-280 Subject = 141-441

To the top of the window

Length = 303 Identity = 46.5 E-Value = 3.8e-26
Query = 3-280 Subject = 140-442

To the top of the window

Length = 301 Identity = 45.2 E-Value = 4.3e-26
Query = 5-280 Subject = 144-444

To the top of the window

Length = 303 Identity = 44.6 E-Value = 7.5e-25
Query = 3-280 Subject = 140-442

To the top of the window

Length = 297 Identity = 43.4 E-Value = 2.6e-24
Query = 4-275 Subject = 140-436

To the top of the window

Length = 249 Identity = 38.6 E-Value = 6.3e-24
Query = 32-272 Subject = 23-259

2014/11/06

