

Sample Code:

positiv Kontrolle

QR-Code:

02DJK2A7

Analyzed on:

13/05/2026

Tested Allergens:

295

Test method:

ALEX<sup>2</sup>

The internal QC (Plausibility check for GD) was within acceptance range.

**Total IgE result: > 2500 kU/L**

Reference range Total IgE

Adults: < 100 kU/L

## Lab report: Summary on detectable sensitisations

### POLLEN

Grass Pollen

Tree Pollen

Weed Pollen

### MITES

House Dust Mites & Storage Mites

### PLANT-BASED FOOD

Legumes

Grains

Spices

Fruits

Vegetables

Nuts & Seeds

### INSECTS & VENOMS

Ant, Bee, Wasp

Cockroach

### MICROORGANISMS

Fungal Spores & Yeast

### ANIMAL-DERIVED FOOD

Milk

Egg

Fish & Seafood

Meat

### EPITHELIAL TISSUES OF ANIMALS

Pets

Farm Animals

### OTHERS

Latex

Ficus

CCD

Parasite

### Highest measured IgE concentration per allergen group

< 0,3 kU<sub>A</sub>/L

0,3 - 1 kU<sub>A</sub>/L

1 - 5 kU<sub>A</sub>/L

5 - 15 kU<sub>A</sub>/L

> 15 kU<sub>A</sub>/L

Negative or uncertain

Low IgE level

Moderate IgE level

High IgE level

Very high IgE level

Name	E/M	Allergen	Function	kU <sub>A</sub> /L
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## POLLEN

### Grass Pollen

Bermuda grass		Cyn d		1,90
		Cyn d 1	Beta-Expansin	4,47
Perennial Ryegrass		Lol p 1	Beta-Expansin	3,77
Bahia grass		Pas n		4,44
Timothy grass		Phl p 1	Beta-Expansin	5,17
		Phl p 2	Expansin	0,47
		Phl p 5.0101	Grass Group 5/6	5,31
		Phl p 6	Grass Group 5/6	0,74
		Phl p 7	Polcalcin	7,90
		Phl p 12	Profilin	0,35
Common reed		Phr c		< 0,10
Rye, Pollen		Sec c_pollen		1,85

### Tree Pollen

Acacia		Aca m		< 0,10
Tree of Heaven		Ail a		< 0,10
Alder		Aln g 1	PR-10	1,52
		Aln g 4	Polcalcin	10,25
Silver birch		Bet v 1	PR-10	1,73
		Bet v 2	Profilin	< 0,10
		Bet v 6	Isoflavon Reductase	< 0,10
Paper mulberry		Bro pa		< 0,10
Hazel pollen		Cor a_pollen		< 0,10
		Cor a 1.0103	PR-10	1,12
Sugi		Cry j 1	Pectate Lyase	2,60
Arizona cypress		Cup a 1	Pectate Lyase	0,63
Cypress		Cup s		< 0,10
Beech		Fag s 1	PR-10	0,87
Ash		Fra e		< 0,10
		Fra e 1	Ole e 1 Family	< 0,10
Walnut, Pollen		Jug r_pollen		0,60
Mountain cedar		Jun a		< 0,10
Mulberry tree		Mor r		< 0,10
Olive		Ole e 1	Ole e 1 Family	< 0,10

Name	E/M	Allergen	Function	kU <sub>A</sub> /L
	⊙	Ole e 9	β-1,3-Glucanase	< 0,10
Date palm	⊙	Pho d 2	Profilin	0,93
London plane tree	⊙	Pla a 1	Plant Invertase	< 0,10
	⊙	Pla a 2	Polygalacturonase	< 0,10
	⊙	Pla a 3	nsLTP	0,11
Cottonwood	⊙	Pop n		< 0,10
Elm	⊙	Ulm c		< 0,10

## Weed Pollen

Pigweed	⊙	Ama r		< 0,10
Ragweed	⊙	Amb a		0,25
	⊙	Amb a 1	Pectate Lyase	1,14
	⊙	Amb a 4	Plant Defensin	0,10
Mugwort	⊙	Art v		0,34
	⊙	Art v 1	Plant Defensin	0,14
	⊙	Art v 3	nsLTP	1,61
Hemp	⊙	Can s		0,44
	⊙	Can s 3	nsLTP	0,31
Lamb's quarter	⊙	Che a		< 0,10
	⊙	Che a 1	Ole e 1 Family	< 0,10
Annual mercury	⊙	Mer a 1	Profilin	0,60
Wall pellitory	⊙	Par j		< 0,10
	⊙	Par j 2	nsLTP	1,35
Ribwort	⊙	Pla l		< 0,10
	⊙	Pla l 1	Ole e 1 Family	0,22
Russian thistle	⊙	Sal k		< 0,10
	⊙	Sal k 1	Pectin Methylesterase	0,85
Nettle	⊙	Urt d		< 0,10

## MITES

### House Dust Mite

American house dust mite	⊙	Der f 1	Cysteine protease	2,43
	⊙	Der f 2	NPC2 Family	6,80
European house dust mite	⊙	Der p 1	Cysteine protease	6,49
	⊙	Der p 2	NPC2 Family	7,32
	⊙	Der p 5	unknown	1,86

Name	E/M	Allergen	Function	kU <sub>A</sub> /L
		Der p 7	Mites Group 7	0,91
		Der p 10	Tropomyosin	0,15
		Der p 11	Myosin, heavy chain	< 0,10
		Der p 20	Arginine kinase	5,59
		Der p 21	unknown	0,56
		Der p 23	Peritrophin-like protein domain	2,94

## Storage Mite

Acarus siro		Aca s		0,20
Blomia tropicalis		Blo t 5	Mites Group 5	0,21
		Blo t 10	Tropomyosin	0,37
		Blo t 21	unknown	< 0,10
Glycyphagus domesticus		Gly d 2	NPC2 Family	0,62
Lepidoglyphus destructor		Lep d 2	NPC2 Family	0,34
Tyrophagus putrescentiae		Tyr p		0,53
		Tyr p 2	NPC2 Family	< 0,10

## MICROORGANISMS & SPORES

### Yeast

Malassezia sympodialis		Mala s 5	unknown	2,54
		Mala s 6	Cyclophilin	9,93
		Mala s 11	Mn Superoxid Dismutase	2,42
Yeast		Sac c		< 0,10

### Moulds

Alternaria alternata		Alt a 1	Alt a 1-Family	20,26
		Alt a 6	Enolase	0,10
Aspergillus fumigatus		Asp f 1	Mitogillin Family	< 0,10
		Asp f 3	Peroxisomal Protein	1,66
		Asp f 4	unknown	< 0,10
		Asp f 6	Mn Superoxid Dismutase	0,69
Cladosporium herbarum		Cla h		< 0,10
		Cla h 8	Short Chain Dehydrogenase	< 0,10
Penicillium chrysogenum		Pen ch		< 0,10

Name	E/M	Allergen	Function	kU <sub>A</sub> /L
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## PLANT FOOD

### Legumes

Peanut	⊙	Ara h 1	7/8S Globulin	0,38
	⊙	Ara h 2	2S Albumin	1,05
	⊙	Ara h 3	11S Globulin	0,38
	⊙	Ara h 6	2S Albumin	< 0,10
	⊙	Ara h 8	PR-10	1,14
	⊙	Ara h 9	nsLTP	1,10
	⊙	Ara h 15	Oleosin	< 0,10
Chickpea	⊙	Cic a		< 0,10
Soy	⊙	Gly m 4	PR-10	0,37
	⊙	Gly m 5	7/8S Globulin	< 0,10
	⊙	Gly m 6	11S Globulin	< 0,10
	⊙	Gly m 8	2S Albumin	< 0,10
Lentil	⊙	Len c		< 0,10
Common bean	⊙	Pha v		< 0,10
Pea	⊙	Pis s		< 0,10

### Grains

Oat	⊙	Ave s		0,87
Quinoa	⊙	Che q		< 0,10
Buckwheat	⊙	Fag e		< 0,10
	⊙	Fag e 2	2S Albumin	< 0,10
Barley	⊙	Hor v		< 0,10
Lupine seed	⊙	Lup a		0,12
Rice	⊙	Ory s		< 0,10
Millet	⊙	Pan m		< 0,10
Cultivated rye	⊙	Sec c_flour		< 0,10
Wheat	⊙	Tri a aA_TI	Alpha Amylase-Trypsin Inhibitor	< 0,10
	⊙	Tri a 14	nsLTP	0,77
	⊙	Tri a 19	Omega-5-Gliadin	< 0,10
Spelt	⊙	Tri s		< 0,10
Maize	⊙	Zea m		1,06
	⊙	Zea m 14	nsLTP	2,35

Name	E/M	Allergen	Function	kU <sub>A</sub> /L
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## Spices

Paprika		Cap a		< 0,10
Caraway		Car c		< 0,10
Oregano		Ori v		< 0,10
Parsley		Pet c		< 0,10
Anise		Pim a		< 0,10
Mustard		Sin		0,18
		Sin a 1	2S Albumin	0,37

## Fruits

Kiwi		Act d 1	Cysteine protease	< 0,10
		Act d 2	TLP	0,25
		Act d 5	Kiwellin	< 0,10
		Act d 10	nsLTP	1,04
Papaya		Car p		< 0,10
Orange		Cit s		< 0,10
Muskmelon		Cuc m 2	Profilin	0,93
Fig		Fic c		< 0,10
Strawberry		Fra a 1+3	PR-10+LTP	1,86
Apple		Mal d 1	PR-10	1,26
		Mal d 2	TLP	0,12
		Mal d 3	nsLTP	2,23
Mango		Man i		< 0,10
Banana		Mus a		< 0,10
Avocado		Pers a		< 0,10
Cherry		Pru av		< 0,10
Peach		Pru p 3	nsLTP	2,09
Pear		Pyr c		< 0,10
Blueberry		Vac m		< 0,10
Grape		Vit v 1	nsLTP	3,89

## Vegetables

Onion		All c		< 0,10
Garlic		All s		< 0,10
Celery		Api g 1	PR-10	< 0,10

Name	E/M	Allergen	Function	kU <sub>A</sub> /L
		Api g 2	nsLTP	1,85
		Api g 6	nsLTP	< 0,10
Carrot		Dau c		< 0,10
		Dau c 1	PR-10	0,19
Potato		Sol t		0,33
Tomato		Sola l		< 0,10
		Sola l 6	nsLTP	< 0,10

## Nuts

Cashew		Ana o		1,91
		Ana o 2	11S Globulin	0,40
		Ana o 3	2S Albumin	1,38
Brazil nut		Ber e		< 0,10
		Ber e 1	2S Albumin	< 0,10
Pecan		Car i		< 0,10
Hazelnut		Cor a 1.0401	PR-10	4,05
		Cor a 8	nsLTP	1,00
		Cor a 9	11S Globulin	0,16
		Cor a 11	7/8S Globulin	0,14
		Cor a 14	2S Albumin	< 0,10
Walnut		Jug r 1	2S Albumin	0,38
		Jug r 2	7/8S Globulin	< 0,10
		Jug r 3	nsLTP	1,08
		Jug r 4	11S Globulin	0,25
		Jug r 6	7/8S Globulin	< 0,10
Macadamia		Mac i 2S Albumin	2S Albumin	< 0,10
		Mac inte		< 0,10
Pistachio		Pis v 1	2S Albumin	0,48
		Pis v 2	11S Globulin subunit	0,17
		Pis v 3	7/8S Globulin	0,29
Almond		Pru du		< 0,10

## Seeds

Pumpkin seed		Cuc p		< 0,10
Sunflower seed		Hel a		< 0,10
Poppy seed		Pap s		< 0,10

Name	E/M	Allergen	Function	kU <sub>A</sub> /L
Sesame		Pap s 2S Albumin	2S Albumin	< 0,10
		Ses i		< 0,10
Fenugreek seeds		Ses i 1	2S Albumin	< 0,10
		Tri fo		< 0,10

## ANIMAL FOOD

### Milk

Cow's milk		Bos d_milk		2,33
		Bos d 4	α-Lactalbumin	< 0,10
		Bos d 5	β-Lactoglobulin	< 0,10
		Bos d 8	Casein	1,41
Camel's milk		Cam d		0,14
Goat's milk		Cap h_milk		0,64
Mare's milk		Equ c_milk		0,13
Sheep's milk		Ovi a_milk		0,76

### Egg

Egg white		Gal d_white		0,28
Egg yolk		Gal d_yolk		0,12
Egg white		Gal d 1	Ovomucoid	0,20
		Gal d 2	Ovalbumin	0,10
		Gal d 3	Ovotransferrin	0,25
		Gal d 4	Lysozyme C	< 0,10
Egg yolk		Gal d 5	Serum Albumin	0,26

### Seafood

Anisakis simplex		Ani s 1	Kunitz Serin Protease Inhibitor	< 0,10
		Ani s 3	Tropomyosin	0,12
Crab		Chi spp.		0,16
Herring		Clu h		0,23
		Clu h 1	β-Parvalbumin	1,74
Brown shrimp		Cra c 6	Troponin C	< 0,10
Carp		Cyp c 1	β-Parvalbumin	1,16
Atlantic cod		Gad m		0,17
		Gad m 2+3	β-Enolase & Aldolase	< 0,10

Name	E/M	Allergen	Function	kU <sub>A</sub> /L
	⊙	Gad m 1	β-Parvalbumin	0,86
Lobster	⊙	Hom g		< 0,10
Shrimp	⊙	Lit s		< 0,10
Squid	⊙	Lol spp.		< 0,10
Common mussel	⊙	Myt e		< 0,10
Oyster	⊙	Ost e		< 0,10
Northern prawn	⊙	Pan b		< 0,10
Scallop	⊙	Pec spp.		< 0,10
Black Tiger Shrimp	⊙	Pen m 1	Tropomyosin	< 0,10
	⊙	Pen m 2	Arginine kinase	3,77
	⊙	Pen m 3	Myosin, light chain	1,13
	⊙	Pen m 4	Sarcoplasmic Calcium Binding Protein	< 0,10
Thornback ray	⊙	Raj c		< 0,10
	⊙	Raj c Parvalbumin	α-Parvalbumin	< 0,10
Venus clam	⊙	Rud spp.		< 0,10
Salmon	⊙	Sal s		< 0,10
	⊙	Sal s 1	β-Parvalbumin	0,78
Atlantic mackerel	⊙	Sco s		< 0,10
	⊙	Sco s 1	β-Parvalbumin	1,83
Tuna	⊙	Thu a		< 0,10
	⊙	Thu a 1	β-Parvalbumin	2,53
Swordfish	⊙	Xip g 1	β-Parvalbumin	1,74

## Meat

House cricket	⊙	Ach d		< 0,10
Beef	⊙	Bos d_meat		0,11
	⊙	Bos d 6	Serum Albumin	< 0,10
Horse, meat	⊙	Equ c_meat		< 0,10
Chicken meat	⊙	Gal d_meat		< 0,10
Migratory locust	⊙	Loc m		0,54
Turkey, meat	⊙	Mel g		< 0,10
Rabbit, meat	⊙	Ory_meat		< 0,10
Lamb	⊙	Ovi a_meat		1,14
Pork	⊙	Sus d_meat		< 0,10
	⊙	Sus d 1	Serum Albumin	2,42
Mealworm	⊙	Ten m		0,35

Name	E/M	Allergen	Function	kU <sub>A</sub> /L
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## INSECTS & VENOMS

### Fire ant poison

Fire ant		Sol spp.		< 0,10
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### Honey Bee Venom

Honey bee		Api m		< 0,10
		Api m 1	Phospholipase A2	< 0,10
		Api m 10	Icarapin Variant 2	< 0,10

### Wasp Venom

Long-headed wasp		Dol spp		< 0,10
Paper wasp venom		Pol d		< 0,10
		Pol d 5	Antigen 5	< 0,10
Common wasp		Ves v		< 0,10
		Ves v 1	Phospholipase A1	< 0,10
		Ves v 5	Antigen 5	< 0,10

### Cockroach

German Cockroach		Bla g 1	Cockroach Group 1	33,08
		Bla g 2	Aspartyl protease	0,13
		Bla g 4	Lipocalin	< 0,10
		Bla g 5	Glutathione S-transferase	< 0,10
		Bla g 9	Arginine kinase	4,30
American Cockroach		Per a		6,13
		Per a 7	Tropomyosin	0,19

## ANIMAL ORIGIN

### Pet

Dog		Can f_Fd1	Uteroglobin	9,16
Male dog urine (incl. Can f 5)		Can f_male urine		6,88
Dog		Can f 1	Lipocalin	8,47
		Can f 2	Lipocalin	7,31
		Can f 3	Serum Albumin	8,06

Name	E/M	Allergen	Function	kU <sub>A</sub> /L
	⊙	Can f 4	Lipocalin	9,31
	⊙	Can f 6	Lipocalin	9,93
Guinea pig	⊙	Cav p 1	Lipocalin	< 0,10
Cat	⊙	Fel d 1	Uterogloblin	9,31
	⊙	Fel d 2	Serum Albumin	6,95
	⊙	Fel d 4	Lipocalin	4,01
	⊙	Fel d 7	Lipocalin	3,21
Mouse	⊙	Mus m 1	Lipocalin	0,94
Rabbit, epithel	⊙	Ory c 1	Lipocalin	< 0,10
	⊙	Ory c 2	Lipophilin	< 0,10
	⊙	Ory c 3	Uterogloblin	< 0,10
Djungarian hamster	⊙	Phod s 1	Lipocalin	< 0,10
Rat, epithel	⊙	Rat n		0,19

## Farm Animals

Cattle	⊙	Bos d 2	Lipocalin	< 0,10
Goat, epithel	⊙	Cap h_epithelia		1,83
Horse, epithel	⊙	Equ c 1	Lipocalin	4,32
	⊙	Equ c 3	Serum Albumin	1,14
	⊙	Equ c 4	Latherin	0,10
Sheep, epithel	⊙	Ovi a_epithelia		0,13
Pig, epithel	⊙	Sus d_epithelia		1,51

## OTHERS

### Latex

Latex	⊙	Hev b 1	Rubber elongation factor	< 0,10
	⊙	Hev b 3	Small rubber particle protein	< 0,10
	⊙	Hev b 5	unknown	0,33
	⊙	Hev b 6.02	Pro-Hevein	< 0,10
	⊙	Hev b 8	Profilin	0,19
	⊙	Hev b 11	Class 1 Chitinase	< 0,10

### Ficus

Weeping fig	⊙	Fic b		< 0,10
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Name	E/M	Allergen	Function	kU <sub>A</sub> /L
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## CCD

Hom s Lactoferrin		Hom s LF	CCD	< 0,10
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## Parasite

Pigeon tick		Arg r 1	Lipocalin	< 0,10
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22/05/2026

APPROVED ON

13/05/2026

## Information to cross-reactive allergens

### Polcalcins

Polcalcins show a very high degree of cross-reactivity.

Polcalcins are calcium binding proteins only expressed in mature pollen. Positive sIgE results against polcalcines can be considered a marker of polysensitisation with unknown clinical relevance for respiratory symptoms.

### Profilins

Profilins show a very high degree of cross-reactivity.

Depending on the population, up to 50% of pollen allergics are sensitised to profilin (higher rate in Mediterranean countries, lower rate in Northern Europe). The sensitisation to profilin can cause inhalative symptoms. Up to 50% of profilin sensitised patients may have food allergy - oral allergy syndrome in most cases. Raw tomato, melon, watermelon, and citrus fruits are typically associated with profilin. Profilins are not stable to processing.

### PR-10

PR-10 allergens show a high degree of cross-reactivity.

PR-10 inhalative:

The major birch pollen allergen, Bet v 1, represents the prototype of all PR-10 allergens and is the primary sensitiser in regions with birch pollen exposure. The presence of PR-10 allergens in Fagales tree pollen explains IgE cross-reactivity between pollen from hazel, alder, beech, oak and hornbeam.

PR-10 nutritive:

PR-10 allergens in raw fruits, nuts, vegetable and legumes can induce oral allergy syndrome and sometimes severe allergic reactions in sensitised individuals, if a high amount of the respective allergen is consumed. PR-10 allergens are not stable to processing.

### nsLTPs

nsLTPs show a high degree of cross-reactivity within plant family borders (e.g. stone-fruit, Rosaceae).

nsLTPs are the most prevalent plant-food allergens in Southern Europe. The clinical reactions can be systemic and severe, especially when not associated to birch pollinosis. Pru p 3, the major allergen of peach, plays a precursor role in the sensitization to other nsLTPs. Relevant nsLTPs containing plant-foods belong not only to Rosaceae family (incl. stone- and pomaceous fruit), but also to the nuts and legumes group, as well as to cereals such as wheat, maize and rice. nsLTPs are stable to processing.

### Storage proteins (2S Albumins, 7/8S Globulins, 11S Globulins)

Storage proteins show a limited degree of cross-reactivity.

Storage proteins are major allergens in legumes (e.g. peanut or soy), tree nuts (e.g. wal- or hazelnut) and other seeds (e.g. buckwheat, sesame, mustard). Storage proteins are the major cause of severe allergic reactions, including anaphylaxis. Storage proteins are stable

to processing.

## Lipocalins

Lipocalins show a limited degree of cross-reactivity.

Lipocalins are airborne and easily spread in indoor environments. They are a risk factor for respiratory symptoms and asthma. The impact of individual lipocalin allergens on severity of symptoms is unknown.

## Serum Albumins

Serum albumins show a very high degree of cross-reactivity.

Serum albumins represent a minor respiratory allergen of animal dander. Serum albumins are also implicated in rare allergic diseases like pork-cat and bird-egg syndrome. Meat and milk allergen: May elicit severe symptoms upon ingestion of uncooked or unboiled food, not stable to processing.

## Parvalbumins

Parvalbumins show a very high degree of cross-reactivity.

Clinical cross-reactivity between different fish species is explained by highly conserved parvalbumin IgE epitopes. Parvalbumins are food and respiratory allergens and can cause severe allergic reactions. Parvalbumins are stable to processing.

## Tropomyosins

Tropomyosins show a very high degree of cross-reactivity.

Tropomyosins can induce diverse symptoms including anaphylaxis. Sensitisation to tropomyosins can occur by ingestion (seafood), inhalation (mites, cockroaches) or parasite infection (ascariasis, anisakiasis). Tropomyosins are stable to processing.

## NPC2

NPC2 allergens show a limited degree of cross-reactivity.

Members of the NPC2 family are present in house dust- and storage mites. The cross-reactivity between Der f 2 and Der p 2 is quite extensive. NPC2 allergens from storage mites show only a limited degree of cross-reactivity to their pendants in house dust mites.

## Uteroglobin

Uteroglobins show a limited degree of cross-reactivity.

Uteroglobins are generated in salivary glands and in the skin of some furry animals. Higher levels of sIgE against Uteroglobins were observed in children with asthma to cat.

## Arginine kinase

Arginine kinases show a very high degree of cross-reactivity.

Arginine kinases from food sources can elicit allergic reactions. Sensitizations against Arginine kinases can occur after ingestion (seafood) and inhalation (cockroaches, mites, seafood). Arginine kinases are not stable towards heat and digestion.

ALEX<sup>2</sup> - Number of tested allergen sources:

165

**GRASS POLLEN**

6

Bahia grass, Bermuda grass, Common reed, Perennial ryegrass, Rye, Timothy grass

**COCKROACH**

2

American cockroach, German cockroach

**TREE POLLEN**

19

Acacia, Alder, Arizona Cypress, European Ash, Beech, Cottonwood, Date palm, Elm, Hazel, London Plane Tree, Mediterranean Cypress, Mountain cedar, Mulberry, Olive, Paper mulberry, Silver birch, Sugi, Tree of Heaven, Walnut

**INSECT VENOMS**

5

Common wasp venom, Fire ant venom, Honeybee venom, Long-headed wasp venom, Paper wasp venom

**WEED POLLEN**

10

Annual mercury, Hemp, Lamb's quarter, Mugwort, Nettle, Pigweed, Ragweed, Ribwort, Russian thistle, Wall pellitory

**FUNGAL SPORES & YEAST**

6

Alternaria alternata, Aspergillus fumigatus, Baker's yeast, Cladosporium herbarum, Malassezia sympodialis, Penicillium chrysogenum

**HOUSE DUST MITES & STORAGE MITES**

7

Acarus siro, American house dust mite, Blomia tropicalis, European house dust mite, Glycyphagus domesticus, Lepidoglyphus destructor, Tyrophagus putrescentiae

**MILK**

5

Camel's milk, Cow's milk, Goat's milk, Mare's milk, Sheep's milk

**LEGUMES**

6

Chickpea, Common bean, Lentil, Pea, Peanut, Soy

**EGG**

2

Egg white, Egg yolk

**GRAINS**

11

Barley, Buckwheat, Corn, Cultivated rye, Lupine, Millet, Oat, Quinoa, Rice, Spelt, Wheat

**FISH & SEAFOOD**

20

Anisakis simplex, Atlantic cod, Atlantic herring, Atlantic mackerel, Black-Tiger shrimp, Brown shrimp, Carp, Common mussel, Crab, Lobster, Northern prawn, Oyster, Salmon, Scallop, Shrimp mix, Squid, Swordfish, Thornback ray, Tuna, Venus clam

**SPICES**

6

Anise, Caraway, Mustard, Oregano, Paprika, Parsley

**MEAT**

10

Beef, Chicken, Horse, House cricket, Lamb, Mealworm, Migratory locust, Pig, Rabbit, Turkey

**FRUITS**

15

Avocado, Apple, Banana, Blueberry, Cherry, Fig, Grape, Kiwi, Mango, Muskmelon, Orange, Papaya, Peach, Pear, Strawberry

**PETS**

7

Cat, Djungarian hamster, Dog, Guinea pig, Mouse, Rabbit, Rat

**VEGETABLES**

6

Carrot, Celery, Garlic, Onion, Potato, Tomato

**FARM ANIMALS**

5

Cattle, Goat, Horse, Pig, Sheep

**NUTS & SEEDS**

13

Almond, Brazil nut, Cashew, Hazelnut, Macadamia, Pecan, Pistachio, Walnut, Fenugreek seeds, Poppy seed, Pumpkin seed, Sesame, Sunflower seed

**OTHERS**

4

Latex, Hom s lactoferrin, Pigeon tick, Weeping fig

# Raven Interpretation Summary

## Sample Information

The sample was tested on QR code 02DJK2A7, interpretation date 22/05/2026.

Of the tested 294 allergens, 112 were/was above the cut off of 0.3 kU<sub>A</sub>/L. A sensitisation can be an indicator of an IgE dependent allergy. For all positive ALEX allergens, comments for interpretation guidance are listed below.

## Total IgE: ≥2500 kU/L

The measured total IgE was ≥2500 kU/L. A high total IgE titre indicates that allergy is likely.

## Cross-Reactive allergen sensitisation detected

Sensitisations against molecular allergens which are markers of (broad) cross-reactivity between different allergen sources were detected.

Detected cross-reactive allergen sensitisations:

- PR-10s: Aln g 1, Ara h 8, Bet v 1, Cor a 1.0103, Cor a 1.0401, Fag s 1, Gly m 4, Mal d 1
- nsLTGs: Act d 10, Api g 2, Ara h 9, Art v 3, Can s 3, Cor a 8, Jug r 3, Mal d 3, Par j 2, Pru p 3, Tri a 14, Vit v 1, Zea m 14
- Profilins: Cuc m 2, Mer a 1, Phl p 12, Pho d 2
- Parvalbumins: Clu h 1, Cyp c 1, Gad m 1, Sal s 1, Sco s 1, Thu a 1, Xip g 1
- Cysteine Proteases: Der f 1, Der p 1
- Polcalcins: Aln g 4, Phl p 7
- Storage Proteins: Ana o 2, Ana o 3, Ara h 1, Ara h 2, Ara h 3, Jug r 1, Pis v 1, Sin a 1
- Tropomyosins: Blo t 10
- Lipocalins: Can f 1, Can f 2, Can f 4, Can f 6, Equ c 1, Fel d 4, Fel d 7, Mus m 1
- Arginin Kinases: Bla g 9, Der p 20, Pen m 2

### PR-10 Proteins

PR-10 inhalative: The major birch pollen allergen, Bet v 1, represents the prototype of all PR-10 allergens and is the primary sensitizer in regions with birch-pollen exposure. The presence of PR-10 allergens in birch related tree pollen explains possible IgE cross-reactivity between pollen from hazel, alder, beech, oak and hornbeam. PR-10 nutritive: PR-10 allergens in fresh fruits, nuts, vegetables and legumes can induce oral allergy syndrome and sometimes even severe allergic reactions in sensitised individuals. PR-10 allergens are not stable to heat and digestion.

### Non-specific Lipid Transfer Proteins (nsLTP)

Members of the nsLTP allergen family can cause inhalative symptoms (nsLTP in pollen), as well as mild to severe forms of food allergy. nsLTP allergens can be found in tree- and weed pollen, and in many plant foods as well as in latex. Inhalative symptoms manifest themselves as allergic rhinoconjunctivitis and/or allergic asthma. nsLTP food allergens can trigger both mild and severe reactions. nsLTGs are stable to heat and digestion.

### Profilins

Members of the Profilin allergen family can cause inhalative symptoms, as well as mild forms of food allergy. Profilins are present in all plant based allergen sources. Inhalative symptoms - if they occur at all - are usually mild. Profilin food allergy is usually mild and restricted to oral allergy syndrome. Profilins from foods are not resistant to heat and digestion.

### Parvalbumins

Parvalbumins are the major allergens from fish species. The degree of cross-reactivity between different Parvalbumins is high, but not absolute. Parvalbumins are resistant to heat and digestion. α-Parvalbumin from thornback ray has been described as hypoallergenic.

### Cysteine Proteases

Members of the CP allergen family can cause inhalative symptoms, as well as mild to severe forms of food allergy. CP allergens can be found in several fruits, mites and in ragweed pollen. Inhalative symptoms manifest as allergic rhinoconjunctivitis and/or allergic asthma. CP food allergens can cause severe reactions. Fruit CP allergens are resistant to heat and digestion.

### Polcalcins (Ca<sup>++</sup> binding proteins)

Members of the PC allergen family can cause inhalative symptoms. PC allergens can be found in pollen from grasses, trees and weeds. Inhalative symptoms manifest as allergic rhinoconjunctivitis and/or allergic asthma.

### Storage Proteins

Members of the storage protein allergen families are able to induce mild and strong allergic reactions and even anaphylactic shock. Allergens of these families can be found in legumes, nuts and seeds. Storage proteins are resistant to heat and digestion. Storage protein allergen families include 2S Albumins, 7/8S & 11S Globulins.

### Tropomyosins

Members of the Tropomyosin allergen family can cause inhalative, as well as mild to severe reactions after consumption of seafood. Allergens of the Tropomyosin allergen family have been identified in fish-parasites, insects (e.g. cockroach), mites and seafood. The degree of cross-reactivity between TM members is high.

### Lipocalins

Nearly all members of the Lipocalin allergen family can cause inhalative symptoms like allergic rhinoconjunctivitis and allergic asthma. Lipocalin from pigeon tick is associated with idiopathic nocturnal anaphylaxis. The degree of cross-reactivity varies wildly between members of this family. Some members of the Lipocalin family serve as markers for AIT indication.

### Arginin Kinase (AK)

Arginine Kinases show a very high degree of cross-reactivity. AK from food sources can elicit allergic reactions. Sensitisations against AKs can occur after ingestion (seafood) and inhalation (cockroaches, mites, seafood). AKs are not stable towards heat and digestion.

## Tree Pollen

### Birch Family

Sensitisation to pollen from the birch family was detected. Allergic symptoms associated with this allergen source range from allergic rhinoconjunctivitis to allergic asthma.

Aln g 1 is a member of the PR-10 allergen family and is associated with inhalative symptoms and mostly mild forms of food allergy (e.g. oral allergy syndrome). The degree of cross-reactivity between Aln g 1 and pollen- as well as food-allergens from the PR-10 allergen family is high. The importance of these cross-reactions has to be analysed on a clinical level. Aln g 1 serves as a marker for AIT indication, if corresponding clinical symptoms are present.

Aln g 4 is a member of the Polcalcin allergen family and is associated with inhalative symptoms. The degree of cross-reactivity between Aln g 4 and other members of the Polcalcin allergen family is high. The importance of these cross-reactions has to be analysed on a clinical level.

Bet v 1 is the major allergen in birch pollen and a member of the PR-10 allergen family. It is associated with inhalative symptoms and mostly mild forms of food allergy (e.g. oral allergy syndrome). The degree of cross-reactivity between Bet v 1 and pollen- as well as food-allergens from the PR-10 allergen family is high. The importance of these cross-reactions has to be analysed on a clinical level. Bet v 1 serves as a marker for AIT indication, if corresponding clinical symptoms are present.

Cor a 1.0103 is a member of the PR-10 family and is associated with inhalative symptoms and mostly mild forms of food allergy (e.g. oral allergy syndrome). The degree of cross-reactivity between Cor a 1.0103 and pollen- as well as food-allergens from the PR-10 allergen family is high. The importance of these cross-reactions has to be analysed on a clinical level. Cor a 1.0103 serves as a marker for AIT indication, if corresponding clinical symptoms are present.

Fag s 1 is a member of the PR-10 allergen family and is associated with inhalative symptoms and mostly mild forms of food allergy (e.g. oral allergy syndrome). The degree of cross-reactivity between Fag s 1 and between other members of the PR-10 allergen family is high. The importance of these cross-reactions has to be analysed on a clinical level.

Causal treatment is possible via AIT, symptomatic treatment includes anti-histamines and local corticosteroids in various formulations (tablet, spray).

### Cypress Family

Sensitisation to pollen from the cypress family was detected. Allergic symptoms associated with this allergen source range from allergic rhinoconjunctivitis to allergic asthma.

Cry j 1 is a member of the Pectate Lyase allergen family. The degree of cross-reactivity between different cypress species based on Pectate Lyases is high. Cry j 1 serves as a marker for AIT indication, if corresponding clinical symptoms are present.

Cup a 1 is a member of the Pectate Lyase allergen family. The degree of cross-reactivity between different cypress species based on Pectate Lyases is high. Cup a 1 serves as a marker for AIT indication, if corresponding clinical symptoms are present.

Causal treatment is possible via AIT, symptomatic treatment includes anti-histamines and corticosteroids in various formulations (tablet, spray).

### Date Palm

Sensitisation to date palm pollen was detected. Allergic symptoms associated with date palm pollen range from allergic rhinoconjunctivitis to allergic asthma.

Pho d 2 is a member of the Profilin allergen family and is associated with inhalative symptoms and mostly mild forms of food allergy (e.g. oral allergy syndrome). The degree of cross-reactivity between Pho d 2 and other members of the Profilin allergen family is high. The importance of these cross-reactions has to be analysed on a clinical level.

A causal treatment via AIT may not be available. Symptomatic treatment includes anti-histamines and local corticosteroids in various formulations (tablet, spray).

### Walnut Tree

Sensitisation to walnut tree pollen was detected. Allergic symptoms associated with this allergen source range from allergic rhinoconjunctivitis to allergic asthma.

A causal treatment via AIT may not be available. Symptomatic treatment includes anti-histamines and local corticosteroids in various formulations (tablet, spray).

## Grass pollen

Sensitisation to grass pollen was detected. Allergic symptoms associated with grass pollen range from allergic rhinoconjunctivitis to allergic asthma.

Cyn d 1, Lol p 1, Phl p 1 and Zea m 1 are members to the  $\beta$ -Expansin allergen family. The degree of cross-reactivity between members of this allergen family is very high.  $\beta$ -Expansins serve as markers for AIT indication, if corresponding clinical symptoms are present. Positive results were obtained for: Cyn d 1, Lol p 1, Phl p 1.

Phl p 2 is a member of the Expansin allergen family. The degree of cross-reactivity between members of this allergen family is very high. Along with Phl p 1 and 5, Phl p 2 serves as a marker of true grass-pollen sensitisation. Patients with isolated Sensitisation to Phl p 2 are not suitable candidates for AIT.

Phl p 5 is a member of the Grass Group 5/6 allergen family. The degree of cross-reactivity between members of this allergen family is high, although a Grass Group 5/6 allergen has not been described in all grass pollen species. Along with Phl p 1 and Phl p 2, Phl p 5 serves as marker of true grass-pollen sensitisation. Phl p 1 and 5 serve as markers for AIT indication, if corresponding clinical symptoms are present.

Phl p 6 is a member of the Grass Group 5/6 allergen family. The degree of cross-reactivity between members of this allergen family is high.

Phl p 7 is a member of the Polcalcin allergen family and is associated with inhalative symptoms during pollen seasons of grasses, trees and weeds. The degree of cross-reactivity between Phl p 7 and other members of the Polcalcin family is very high. The importance of these cross-reactions has to be analysed on a clinical level.

Phl p 12 is a member of the Profilin allergen family and is associated with inhalative symptoms during pollen seasons of grasses, trees and weeds, and mostly mild forms of food allergy (e.g. oral allergy syndrome). The degree of cross-reactivity between Phl p 12 and other members of the Profilin allergen family is very high. The importance of these cross-reactions has to be analysed on a clinical level.

Causal treatment is possible via AIT - Phl p 1 and 5 serve as markers for AIT indication, if corresponding are present. Symptomatic treatment includes anti-histamines and local corticosteroids in various formulations (tablet, spray).

## Weed Pollen

### Annual Mercury

Sensitisation to pollen from annual mercury was detected. Allergic symptoms associated with this allergen source range from allergic rhinoconjunctivitis to allergic asthma.

Mer a 1 is a member of the Profilin allergen family and is associated with inhalative symptoms during pollen seasons of grasses, trees and weeds, and mostly mild forms of food allergy (e.g. oral allergy syndrome). The degree of cross-reactivity between Mer a 1 and other members of the Profilin allergen family is very high. The importance of these cross-reactions has to be analysed on a clinical level.

Causal treatment via AIT is not available. Symptomatic treatment includes anti-histamines and local corticosteroids in various formulations (tablet, spray).

### Hemp (CBD)

Sensitisation to pollen from hemp was detected. Allergic symptoms associated with this allergen source range from allergic rhinoconjunctivitis to allergic asthma.

Can s 3 is a member of the nsLTP allergen family. The degree of cross-reactivity to most other members of this family can be considered medium to high. Can s 3 reactivity is frequently associated with nsLTP sensitisation in Mediterranean patients. Can s 3 reactivity is frequently found positive in patients with food allergy caused by nsLTPs.

Causal treatment via AIT is not available. Symptomatic treatment includes anti-histamines, local corticosteroids in various formulations and avoidance (tablet, spray).

### Mugwort

Sensitisation to pollen from mugwort was detected. Allergic symptoms associated with this allergen source range from allergic rhinoconjunctivitis to allergic asthma.

Art v 3 is a member of the nsLTP allergen family. The degree of cross-reactivity to most other members of this family can be considered medium to high. Art v 3 reactivity is frequently associated with nsLTP sensitisation in Mediterranean patients. AIT is not indicated, when Art v 3 is the only positive allergen from mugwort pollen. Art v 3 reactivity is frequently found positive in patients with food allergy caused by nsLTPs.

Causal treatment is possible via AIT - Art v 1 serves as a marker for AIT indication, if corresponding clinical symptoms are present. Symptomatic treatment includes anti-histamines and local corticosteroids in various formulations (tablet, spray).

### Ragweed

Sensitisation to pollen from ragweed was detected. Allergic symptoms associated with this allergen source range from allergic rhinoconjunctivitis to allergic asthma.

Amb a 1 is a member of the Pectate Lyase allergen family. The degree of cross-reactivity to allergens from the same family is moderate (e.g. with Art v 6 from mugwort). Amb a 1 serves as a marker for AIT indication, if corresponding clinical symptoms are present.

Causal treatment is possible via AIT - Amb a 1 serves as a marker for AIT indication, if clinical symptoms are present. Symptomatic treatment includes anti-histamines and local corticosteroids in various formulations (tablet, spray).

### Russian Thistle

Sensitisation to pollen from Russian thistle was detected. Allergic symptoms associated with this allergen source range from allergic rhinoconjunctivitis to allergic asthma.

Sal k 1 is a member of the Pectin Methylesterase allergen family. So far, two other members of this allergen family have been described, in kiwi and in olive pollen. The degree of cross-reactivity is considered low to moderate to related allergens. Sal k 1 serves as a marker for AIT indication, if corresponding clinical symptoms are present.

Causal treatment is possible via AIT - Sal k 1 serves as a marker for AIT indication. Symptomatic treatment includes anti-histamines and local corticosteroids in various formulations (tablet, spray).

### Wall pellitory

Sensitisation to pollen from pellitory was detected. Allergic symptoms associated with this allergen source range from allergic rhinoconjunctivitis to allergic asthma.

Par j 2 is a member of the nsLTP allergen family. The degree of cross-reactivity to most other members of this family can be considered low. Par j 2 is a highly specific marker for pellitory sensitisation.

Causal treatment is possible via AIT - Par j 2 serves as a marker for AIT indication, if corresponding clinical symptoms are present. Symptomatic treatment includes anti-histamines and local corticosteroids in various formulations (tablet, spray).

## Furry Animals

### Cat

Sensitisation to cat was detected. Allergic symptoms associated with this allergen source range from allergic rhinoconjunctivitis to allergic asthma.

Fel d 1 is a member of the Uteroglobulin (UG) allergen family and a marker for genuine cat allergy. Fel d 1 also serves as a marker for AIT indication, if corresponding clinical symptoms are present. The degree of cross-reactivity between Fel d 1 and other members of the UG allergen family is low to moderate (e.g. Can f Fel d 1 like from dog).

Fel d 2 is a member of the Serum Albumin allergen family (SA). The degree of cross-reactivity to other members of the SA family is very high (e.g. Can f 3 from dog). Sensitisation to Fel d 2 can also lead to cat-pork syndrome.

Fel d 4 is a member of the Lipocalin allergen family (LC). A moderate degree of crossreactivity to LC from dog (Can f 4) and horse (Equ c 1) have been described.

Fel d 7 is a member of the Lipocalin allergen family (LC). A moderate degree of crossreactivity to LC from dog (Can f 1) has been described.

If avoidance of cats is not possible, an AIT can be prescribed. Symptomatic treatment includes anti-histamines as well as local corticosteroids in various formulations (tablet, spray). Avoidance of exposition to cats is strongly recommended.

## Dog

Sensitisation to dog was detected. Allergic symptoms associated with this allergen source range from allergic rhinoconjunctivitis to allergic asthma.

Can f 1 is a member of the Lipocalin allergen family (LC). There is a moderate risk of cross-reactivity with Fel d 7, a LC from cat. Can f 1 serves as a specific marker for dog sensitisation and as a marker for AIT, if corresponding clinical symptoms are present. The highest concentrations are found in fur and saliva.

Can f 2 is a member of the Lipocalin allergen family (LC). The degree of cross-reactivity with other LCs is low. Can f 2 serves as a marker for true dog sensitisation. The highest concentration of Can f 2 is found in saliva.

Can f 3 is a member of the Serum Albumin allergen family (SA). The degree of cross-reactivity with SAs from other species is very high, with the exception of Gal d 5 from hen's egg yolk. The highest concentration is found in epithelia.

Can f 4 is a member of the Lipocalin allergen family (LC). The degree of cross-reactivity to other members of the LC family is very low. A low degree of cross-reactivity has been reported with a related allergen from cattle. Can f 4 is the most abundant allergen in dog fur.

Can f 5 is a member of the Arginine Esterase allergen family. It is a major allergen in male dogs only. Female and castrated dogs do not express Can f 5 in significant amounts. Also, patients sensitised to Can f 5 may react to human seminal fluid.

Can f 6 is a member of the Lipocalin allergen family (LC). The degree of cross-reactivity to other LCs is low, except for a moderate risk to crossreact with Fel d 4 from cat and Equ c 1 from horse.

Can f Fel d 1 like is a member of the Uteroglobin like allergen family. The degree of cross-reactivity to Fel d 1 from cat is moderate.

If avoidance of dogs is not possible an AIT can be prescribed. Symptomatic treatment includes anti-histamines as well as local corticosteroids in various formulations (tablet, spray). Avoidance is strongly recommended.

## Goat

Sensitisation to goat was detected. Allergic symptoms associated with this allergen source range from allergic rhinoconjunctivitis to allergic asthma, especially when exposure is frequent (e.g. goat breeders).

AIT for causal treatment may not be available. Symptomatic treatment includes anti-histamines as well as local corticosteroids in various formulations (tablet, spray). Avoidance is strongly recommended.

## Horse

Sensitisation to horse was detected. Allergic symptoms associated with this allergen source range from allergic rhinoconjunctivitis to allergic asthma.

Equ c 1 is a member of the Lipocalin allergen family (LC). There is a moderate risk of cross-reactivity to Fel d 4 (cat) and Can f 6 (dog). Equ c 1 is dispersed via saliva and dander.

Equ c 3 is a member of the Serum Albumin allergen family (SA). The degree of cross-reactivity between members of this family is very high. Aside from inhalative reactions, Equ c 3 could elicit symptoms in horse meat or other red meat allergic patients.

If avoidance of horses is not possible an AIT can be prescribed - Equ c 1 serves a marker for AIT indication, if corresponding clinical symptoms are present. Symptomatic treatment includes anti-histamines as well as local corticosteroids in various formulations (tablet, spray). Avoidance is strongly recommended.

## Mouse

Sensitisation to mouse was detected. Allergic symptoms associated with this allergen source range from allergic rhinoconjunctivitis to allergic asthma, especially when exposure is frequent (e.g. in laboratory workers).

Mus m 1 is a member of the Lipocalin allergen family. The degree of cross-reactivity to other members of this family is low (Exception: Rat n 1 from rat).

AIT for causal treatment may not be available. Symptomatic treatment includes anti-histamines as well as local corticosteroids in various formulations (tablet, spray). Avoidance is strongly recommended.

## Pig

Sensitisation to pig was detected. Allergic symptoms associated with this allergen source range from allergic rhinoconjunctivitis to allergic asthma, especially when exposure is frequent (e.g. swine barn workers).

AIT for causal treatment may not be available. Symptomatic treatment includes anti-histamines as well as local corticosteroids in various formulations (tablet, spray). Avoidance is strongly recommended.

## Moulds and Yeasts

### **Alternaria alternata**

Sensitisation to spores from *Alternaria alternata* was detected. Allergic symptoms associated with *A. alternata* range from allergic rhinoconjunctivitis to allergic asthma. *A. alternata* is an outdoor fungal species.

Alt a 1 is a member of the Alt a 1 allergen family and is associated with inhalative symptoms. Cross-reactions between Alt a 1 and other members of the Alt a 1 allergen family have been described. Alt a 1 serves as a marker for AIT indication, if corresponding clinical symptoms are present.

Causal treatment is possible via AIT, symptomatic treatment includes anti-histamines and local corticosteroids in various formulations (tablet, spray).

### **Aspergillus fumigatus**

Sensitisation to spores from *Aspergillus fumigatus* was detected. Allergic symptoms associated with *A. fumigatus* range from allergic rhinoconjunctivitis to allergic asthma, and also include allergic bronchopulmonary aspergillosis (ABPA). *Aspergillus fumigatus* is an indoor fungal species.

Asp f 3 is a member of the Peroxisomal Protein allergen family and is associated with *A. fumigatus* allergy and strongly associated with ABPA.

Asp f 6 is a member of the Mn-SOD allergen family and is associated with ABPA, but not *A. fumigatus* allergy.

Causal treatment is possible via AIT. Symptomatic treatment includes anti-histamines as well as local corticosteroids in various formulations (tablet, spray). Therapeutic options for ABPA include systemic corticosteroids and itraconazole or omalizumab. Exposure prophylaxis is also an important treatment strategy.

### **Malassezia sympodialis**

Sensitisation to *Malassezia sympodialis* (MS) was detected. This is common in adult atopic dermatitis (AD) patients but rare in healthy individuals. Especially seborrheic skin sites (e.g. head, neck) are preferable colonisation sites.

Mala s 5 is a member of the Redoxin allergen family. The degree of cross-reactivity to other members of this allergen family (from moulds and yeasts) is moderate.

Mala s 6 is a member of the Cyclophilin allergen family. The degree of cross-reactivity to other members of this family is high.

Mala s 11 is a member of the Mn Superoxide Dismutase. The degree of cross-reactivity to other members of this allergen family is high. Mala s 11 is capable of inducing autoreactive T-cells in humans. The significance of this allergen for skin inflammation in atopic dermatitis (AD) was substantiated by a strong correlation between AD severity and Mala s 11 Sensitisation.

Skin emollients are the basis of AD therapy. In case of clinically manifest skin inflammation during AD flares, anti-inflammatory treatment is necessary. AD patients may benefit from an antifungal therapy that is effective against *Malassezia*.

## Mites and Cockroaches

### **House dust mites**

Sensitisation to house dust mite was detected. Allergic symptoms associated with this allergen source range from allergic rhinoconjunctivitis to asthma.

Der p 1 & Der f 1 are members of the Cystein Protease allergen family (CP). The degree of cross-reactivity between different members of the CP family in different house dust mites is high. Both Der p 1 and Der f 1 serve as markers for AIT indication, if corresponding symptoms are present. Positive results were obtained for: Der f 1, Der p 1.

Der p 2 & Der f 2 are members of the NPC2 allergen family. The degree of cross-reactivity between different members of the NPC2 is very high in different house dust mites and less so to related allergens in storage mites. Both Der p 2 and Der 2 serve as markers for AIT indication. Positive results were obtained for: Der f 2, Der p 2.

Der p 5 is a member of the Mite Group 5/21 allergen family (MG 5/21). The degree of cross-reactivity to other members of the MG 5/21 allergen family is moderate (e.g. to Blo t 5).

Der p 7 is a member of the Mite Group 7 allergen family (MG 7). The degree of cross-reactivity to its pendant from *D. farinae* is very high, much lower to related allergens from storage mites

Der p 20 is a member of the Arginine Kinase allergen family (AK). The degree of cross-reactivity to other Arginine Kinases is very high (e.g. Bla g 9 from cockroach & Pen m 2 from shrimp). It is not stable to heat and digestion. The allergic potential of Der p 20 has not been analyzed yet.

Der p 21 is a member of the Mite Group 5/21 allergen family (MG 5/21). The degree of cross-reactivity to other members of the MG 5/21 allergen family is moderate to high between Der p 21 and Blo t 21.

Der p 23 is a member of the Peritrophin-like Protein allergen family (PLP), which is associated with the development of Asthma. The degree of cross-reactivity to other members of the PLP allergen family is not clear.

Allergen avoidance is advised. Encasings for blankets, mattresses and pillows can reduce the allergen load. Der f 1/Der p 1 and Der f 2/Der p 2 are major allergens from house dust mite and serve as markers for AIT indication, if corresponding clinical symptoms are present. Symptomatic treatment includes anti-histamines as well as local corticosteroids in various formulations (tablet, spray).

### Storage Mites

Sensitisation to storage mites was detected. Allergic symptoms associated with this allergen source range from allergic rhinoconjunctivitis to allergic asthma.

Blo t 10 is a member of the Tropomyosin allergen family and it is highly cross-reactive to other members of this allergen family. Sensitisation to Blo t 10 can be the cause for cross-reactions to shrimp and other seafood species (except fish).

Lep d 2 is a member of the NPC2 allergen family. The degree of cross-reactivity between different members of the NPC2 family is moderate. Lep d 2 may serve as a marker for AIT indication, if corresponding clinical symptoms are present.

Gly d 2 is a member of the NPC2 allergen family. The degree of cross-reactivity between different members of the NPC2 family is moderate. Gly d 2 may serve as a marker for AIT indication, if corresponding clinical symptoms are present.

Allergen avoidance is advised. Encasings for blankets, mattresses and pillows can reduce the allergen load. Blo t 5 and 21, Gly d 2, Lep d 2 and Tyr p 2 may serve as markers for AIT indication, if corresponding clinical symptoms are present. Symptomatic treatment includes anti-histamines as well as local corticosteroids in various formulations (tablet, spray).

### Cockroach

Sensitisation to cockroach was detected. Allergic symptoms associated with this allergen source range from allergic rhinoconjunctivitis to allergic asthma.

Bla g 1 is a member of the Cockroach Group 1 allergen family (CG 1). Cross-reactions to other CG 1 family members have been described. High concentrations of Bla g 1 are found in fecal particles.

Bla g 9 is a member of the Arginine Kinase allergen family (AK) and can cause predominately mild reactions. The degree of cross-reactivity to other Arginine Kinases is very high (e.g. Der p 20 from house dust mite or Pen m 2 from shrimp). It is not stable to heat and digestion.

Pest control is advised as a first line measure. If this is not possible, an AIT can be prescribed. Symptomatic treatment includes anti-histamines as well as corticosteroids in various formulations (tablet, spray).

## Grains and Seeds

### Corn

Sensitisation to corn was detected. Allergic symptoms associated with corn range from oral allergy syndrome to anaphylactic reactions. Corn allergens can also induce baker's asthma. Many cases of corn allergy were reported from Italy due to the high consumption of polenta.

Zea m 14 is a member for the nsLTP allergen family and can cause clinical reactions from oral allergy syndrome to anaphylaxis. The degree of cross-reactivity between members of the nsLTP family is high within botanically closely related species (e.g. stone fruit). The importance of these cross-reactions has to be analysed on a clinical level. Zea m 14 is stable towards heat and digestion.

Include extensive patient training on avoidance measures and the prescription of an emergency kit (including adrenalin autoinjector for severe cases).

### Oat

Sensitisation to oat was detected. Allergic symptoms associated with oat include baker's asthma, anaphylaxis and skin reactions. A high prevalence of oat sensitisation has been found in children suffering from atopic dermatitis.

Include extensive patient training on avoidance measures and the prescription of an emergency kit (including adrenalin autoinjector for severe cases).

### Wheat

Sensitisation to wheat (flour) was detected. Allergic symptoms associated with wheat include immediate and exercise induced anaphylaxis, baker's asthma, gastrointestinal- and skin reactions.

Tri a 14 is a member for the nsLTP allergen family and can cause clinical reactions from oral allergy syndrome to anaphylaxis. The degree of cross-reactivity between members of the nsLTP allergen family is high within botanically closely related species (e.g. stone fruit) and moderate between less closely related species. The importance of these cross-reactions has to be analysed on a clinical level. Tri a 14 is stable towards heat and digestion.

Include extensive patient training on avoidance measures and the prescription of an emergency kit (including adrenalin autoinjector for severe cases).

## Fruits

### Apple

Sensitisation to apple was detected. Allergic symptoms associated with apple range from oral allergy syndrome to severe anaphylactic reactions.

Mal d 1 is a member of the PR-10 allergen family and is associated with mild forms of apple allergy (e.g. oral allergy syndrome). The degree of cross-reactivity between Mal d 1 and other members of the PR-10 allergen family is high. The importance of these cross-reactions has to be analysed on a clinical level. In most cases a Mal d 1 sensitisation is caused by a primary sensitisation against Bet v 1 from birch pollen. Mal d 1 is not stable towards heat and digestion.

Mal d 3 is a member for the nsLTP allergen family and can cause clinical reactions from oral allergy syndrome to anaphylaxis. The degree of cross-reactivity between Mal d 3 and other members of the nsLTP family is high within botanically closely related species (e.g. stone fruit). The importance of these cross-reactions has to be analysed on a clinical level. Mal d 3 is stable towards heat and digestion.

As Mal d 1 is heat sensitive, baked or cooked apple can be consumed without danger for clinical reactions. In case of genuine apple allergy due to sensitisations to Mal d 2 and/or 3, avoidance is the therapeutic option of choice. Mal d 3 is primarily located in fruit skin, peeled apple is tolerated by most patients with Mal d 3 sensitisation. Include extensive patient training on avoidance measures and the prescription of an emergency kit (including adrenalin autoinjector for severe cases).

### Grape

Sensitisation to grape was detected. Allergic symptoms associated with grape range from oral allergy syndrome to anaphylaxis. Anaphylactic reactions were described after the intake of wine. Occupational grape allergy causes mainly inhalative symptoms.

Vit v 1 is a member for the nsLTP allergen family and can cause clinical reactions from oral allergy syndrome to anaphylaxis. The degree of cross-reactivity between Vit v 1 and other members of the nsLTP allergen family is high within botanically closely related species (e.g. stone fruit). The importance of these cross-reactions has to be analysed on a clinical level. Vit v 1 is stable towards heat and digestion.

Include extensive patient training on avoidance measures and the prescription of an emergency kit (including adrenalin autoinjector for severe cases).

### Kiwi

Sensitisation to kiwi was detected. Allergic symptoms associated with kiwi allergy range from oral allergy syndrome to severe anaphylactic reactions.

Act d 10 is a member for the nsLTP allergen family and can cause clinical reactions from oral allergy syndrome to anaphylaxis. The degree of cross-reactivity between members of the nsLTP family is high within botanically closely related species (e.g. stone fruit). The importance of these cross-reactions has to be analysed on a clinical level. Act d 10 is stable towards heat and digestion.

Include extensive patient training on avoidance measures and the prescription of an emergency kit (including adrenalin autoinjector for severe cases).

### Muskmelon

Sensitisation to muskmelon was detected. Allergic symptoms associated with muskmelon are usually mild, systemic reactions are rare.

Cuc m 2 is a member of the Profilin allergen family and is associated with mild forms of food allergy (e.g. oral allergy syndrome). The degree of cross-reactivity between Cuc m 2 and between other members of the Profilin allergen family is high. The importance of these cross-reactions has to be analysed on a clinical level.

Include extensive patient training on avoidance measures for mild reactions and the prescription of an emergency kit (including adrenalin autoinjector for severe cases).

### Peach

Sensitisation to peach was detected. Allergic symptoms associated with peach range from oral allergy syndrome to severe anaphylactic reactions.

Pru p 3 is a member for the nsLTP allergen family and can cause clinical reactions from oral allergy syndrome to anaphylaxis. The degree of cross-reactivity between Pru p 3 and other members of the nsLTP allergen family is high within botanically closely related species (e.g. stone fruit). The importance of these cross-reactions has to be analysed on a clinical level. Pru p 3 is stable towards heat and digestion.

Include extensive patient training on avoidance measures and the prescription of an emergency kit (including adrenalin autoinjector for severe cases). As Pru p 3 is primarily located in fruit skin, peeled peach is tolerated by most patients.

### Strawberry

Sensitisation to strawberry was detected. Allergic symptoms associated with strawberry are usually mild, systemic reactions are rare.

Fra a 1 is a member of the PR-10 allergen family and is associated with mild forms of strawberry allergy (e.g. oral allergy syndrome). The degree of cross-reactivity between Fra a 1 and other members of the PR-10 allergen family is high. The importance of these cross-reactions has to be analysed on a clinical level. Usually Fra a 1 sensitisation is caused by a primary sensitisation against Bet v 1 from birch pollen. Fra a 1 is not stable towards heat and digestion. Fra a 3 is a member of the nsLTP allergen family and may cause clinical reactions from oral allergy syndrome to anaphylaxis. The degree of cross-reactivity between Fra a 3 and other members of the nsLTP family is high within botanically closely related species (e.g. stone fruit). The importance of these cross-reactions has to be analysed on a clinical level. Fra a 3 is stable towards heat and digestion.

Include extensive patient training on avoidance measures for mild reactions and the prescription of an emergency kit (including adrenalin autoinjector for severe cases).

## Nuts and Legumes

### Cashew

Sensitisation to cashew was detected. Allergic symptoms associated with cashew range from oral allergy syndrome to severe anaphylactic reactions.

Ana o 1, 2 and 3 are storage proteins associated with clinical reactions up to anaphylaxis. The degree of cross-reactivity between storage proteins from cashew and storage proteins from legumes, nuts and seeds is low to moderate. The importance of these cross-reactions has to be analysed on a clinical level. Ana o 2 & 3 are stable towards heat and digestion. Positive results were obtained for: Ana o 2, Ana o 3.

Include extensive patient training on avoidance measures and the prescription of an emergency kit (including adrenalin autoinjector for severe cases).

### Hazelnut

Sensitisation to hazelnut was detected. Allergic symptoms associated with hazelnut allergens range from oral allergy syndrome to severe anaphylactic reactions.

Cor a 1.0401 is a member of the PR-10 allergen family and is associated with mild forms of hazelnut allergy e.g. oral allergy syndrome. In rare cases, mild systemic reactions occur. Severe anaphylactic reactions are very rare. The degree of cross-reactivity between Cor a 1.0401 and other members of the PR-10 allergen family is high. The importance of these cross-reactions has to be analysed on a clinical level. In most cases a Cor a 1.0401 sensitisation is caused by a primary sensitisation against Bet v 1 from birch pollen. Cor a 1.0401 is not stable towards heat and digestion.

Cor a 8 is a member for the nsLTP allergen family and can cause clinical reactions from oral allergy syndrome to anaphylaxis. The degree of cross-reactivity between members of the nsLTP allergen family is high within botanically closely related species (e.g. stone fruit) and moderate between less closely related species. The importance of these cross-reactions has to be analysed on a clinical level. Cor a 8 is stable towards heat and digestion.

Include extensive patient training on avoidance measures and the prescription of an emergency kit (including adrenalin autoinjector for severe cases).

### Peanut

Sensitisation to peanut was detected. Allergic symptoms associated with peanut range from oral allergy syndrome to severe anaphylactic reactions.

The peanut storage proteins Ara h 1,2,3 and 6 are associated with clinical reactions up to severe anaphylaxis. The degree of cross-reactivity between storage proteins from peanut and storage proteins from legumes, nuts and seeds is low to moderate. The importance of these cross-reactions has to be analysed on a clinical level. Ara h 1,2,3 & 6 are stable towards heat and digestion. Positive results were obtained for: Ara h 1, Ara h 2, Ara h 3.

Ara h 8 is a member of the PR-10 family and is associated with mild forms of peanut allergy e.g. oral allergy syndrome. The degree of cross-reactivity between Ara h 8 and other members of the PR-10 allergen family is moderate to high. The importance of these cross-reactions has to be analysed on a clinical level. In most cases an Ara h 8 sensitisation is caused by a primary sensitisation against Bet v 1 from birch pollen. Ara h 8 is not stable towards heat and digestion

Ara h 9 is a member for the nsLTP allergen family and can cause clinical reactions from oral allergy syndrome to anaphylaxis. The degree of cross-reactivity between members of the nsLTP allergen family is high within botanically closely related species (e.g. stone fruit) and moderate between less closely related species. The importance of these cross-reactions has to be analysed on a clinical level. Ara h 9 is stable towards heat and digestion.

Include extensive patient training on avoidance measures and the prescription of an emergency kit (including adrenalin autoinjector for severe cases).

### **Pistachio**

Sensitisation to pistachio was detected. Allergic symptoms associated with pistachio range from oral allergy syndrome to anaphylaxis.

The pistachio storage proteins Pis v 1,2 and 3 are associated with clinical reactions up to severe anaphylaxis. The degree of cross-reactivity between storage proteins from pistachio and storage proteins from legumes, nuts and seeds is low to moderate, except to Cashew. The importance of these cross-reactions has to be analysed on a clinical level. Pis v 1,2 & 3 are stable towards heat and digestion. Positive results were obtained for: Pis v 1.

Include extensive patient training on avoidance measures and the prescription of an emergency kit (including adrenalin autoinjector for severe cases).

### **Soy**

Sensitisation to soy was detected. Allergic symptoms associated with soy allergens range from oral allergy syndrome to severe anaphylactic reactions.

Gly m 4 is a member of the PR-10 family and is associated with mild forms of soy allergy e.g. oral allergy syndrome, as well as severe reactions after the consumption of unprocessed soy products like soy milk. The degree of cross-reactivity between Gly m 4 and other members of the PR-10 allergen family is high. The importance of these cross-reactions has to be analysed on a clinical level. In most cases a Gly m 4 sensitisation is caused by a primary sensitisation against Bet v 1 from birch pollen. Products like soy milk contain high levels of unprocessed allergens.

Include extensive patient training on avoidance measures and the prescription of an emergency kit (including adrenalin autoinjector for severe cases). Fermented soy products (e.g. soy sauce, miso) have lost allergenicity.

### **Walnut**

Sensitisation to walnut was detected. Allergic symptoms associated with walnut allergens range from oral allergy syndrome to severe anaphylactic reactions.

Jug r 1,2,4 & 6 are storage proteins associated with clinical reactions up to anaphylaxis. The degree of cross-reactivity between storage proteins from walnut and storage proteins from legumes, nuts and seeds is low to moderate. The exception is Jug r 6, which can cross-react with related allergens from tree nuts (e.g. Cor a 11 from hazelnut) and sesame. The importance of these cross-reactions has to be analysed on a clinical level. Jug r 1,2,4 are stable towards heat and digestion. Jug r 6 displays intermediate thermal stability and susceptibility to digestion. Positive results were obtained for: Jug r 1.

Jug r 3 is a member for the nsLTP allergen family and can cause clinical reactions from oral allergy syndrome to anaphylaxis. The degree of cross-reactivity between members of the nsLTP allergen family is high within botanically closely related species (e.g. stone fruit) and moderate between less closely related species. The importance of these cross-reactions has to be analysed on a clinical level. Jug r 3 is stable towards heat and digestion.

Include extensive patient training on avoidance measures and the prescription of an emergency kit (including adrenalin autoinjector for severe cases).

## **Spices**

### **Mustard**

Sensitisation to mustard seed was detected. Allergic symptoms associated with mustard seed range from oral allergy syndrome to anaphylaxis.

Sin a 1 is a storage protein (2S Albumin) associated with clinical reactions up to anaphylaxis. The degree of cross-reactivity between storage proteins from mustard seed and storage proteins from legumes, nuts and seeds is low to moderate. The importance of these cross-reactions has to be analysed on a clinical level. Sin a 1 is stable towards heat and digestion.

Include extensive patient training on avoidance measures and the prescription of an emergency kit (including adrenalin autoinjector for severe cases).

## **Vegetables**

### **Celery**

Sensitisation to celery was detected. Allergic symptoms associated with celery range from oral allergy syndrome to anaphylaxis. Celery allergy is caused by sensitisation to pollen (from birch and mugwort), which causes cross-reactions to celery. Severe reactions to celery are often linked to a primary mugwort pollen sensitisation.

Api g 2 is a member of the nsLTP allergen family and can cause clinical reactions from oral allergy syndrome to anaphylaxis. The degree of cross-reactivity between Api g 2 and other members of the nsLTP family is high within botanically closely related species (e.g. stone fruit). The importance of these cross-reactions has to be analysed on a clinical level. Api g 2 is stable towards heat and digestion. Api g 2 is located in celery stalks, in contrast to Api g 6.

Include extensive patient training on avoidance measures and the prescription of an emergency kit (including adrenalin autoinjector for severe cases).

### Potato

Sensitisation to potato was detected. Allergic symptoms associated with potato allergy range from oral allergy syndrome to gastrointestinal reactions. Skin contact with raw potato may cause local itch and erythema in patients sensitised to birch pollen.

Include extensive patient training on avoidance measures.

## Animal Foods (Milk and Egg)

### Cow's milk

Sensitisation to milk was detected. Allergic symptoms associated with milk include severe anaphylactic reactions, as well as gastrointestinal symptoms and worsening of skin status in individuals suffering from atopic dermatitis. Most children can be expected to outgrow their cow's milk allergy.

Bos d 9-12 are members of the Casein allergen family. The degree of cross-reactivity from Caseins from different milk species is low (e.g. camel milk) to high (e.g. sheep milk). Caseins are stable to heat and digestion.

Bos d 8 is a member of the Casein allergen family. The degree of cross-reactivity between caseins from different species is very high. Caseins are stable to heat and digestion.

Include extensive patient training on avoidance measures and the prescription of an emergency kit (including adrenalin autoinjector for severe cases). Aside from Bos d 8, other cow's milk allergens (Bos d 4, 5 and 6) are not stable to heat.

### Goat's milk

Sensitisation to goat's milk was detected. Allergic symptoms associated with goats's milk include severe anaphylactic reactions, as well as gastrointestinal symptoms and worsening atopic dermatitis. Most children can be expected to outgrow their goat's milk allergy. The degree of cross-reactivity to cow's milk is high, but not absolute.

Include extensive patient training on avoidance measures and the prescription of an emergency kit (including adrenalin autoinjector for severe cases). Camel's milk and mare's milk are viable alternatives.

### Sheep's milk

Sensitisation to sheep's milk was detected. Allergic symptoms associated with sheep's milk include severe anaphylactic reactions, as well as gastrointestinal symptoms and worsening of skin status in individuals suffering from atopic dermatitis. Most children can be expected to outgrow their sheeps's milk allergy. The degree of cross-reactivity to cow's milk is high, but not absolute.

Include extensive patient training on avoidance measures and the prescription of an emergency kit (including adrenalin autoinjector for severe cases). Camel's- and mare's milk are viable alternatives.

## Edible insects

Sensitisation to edible insects was detected. Allergic symptoms associated with edible insects range from oral allergy syndrome to anaphylaxis. The degree of cross-reactivity is high to other insects (e.g. cockroach) and also to mites and seafood.

Include extensive patient training on avoidance measures and the prescription of an emergency kit (including adrenalin autoinjector for severe cases).

## Red Meat

### Horse-meat

Sensitisation to horse meat was detected. Allergy to horse meat is rare, with symptoms presumably ranging from gastro-intestinal complaints to anaphylaxis. Horse meat allergy may result from primary respiratory sensitisation to Equ c 3 (Serum Albumin) or other Serum Albumins. A potential role of alpha-Gal in delayed horse-meat allergy seems possible, but hasn't been demonstrated.

Equ c 3 is a member of the Serum Albumin allergen family (SA). The degree of cross-reactivity between members of this family is very high. Aside from inhalative reactions, Equ c 3 could elicit symptoms in horse meat or other red meat allergic patients.

Include extensive patient training on avoidance measures for mild reactions and the prescription of an emergency kit (including adrenalin autoinjector for severe cases) for severe cases. Heat-treatment, or other approaches such as freeze-drying, can decrease the allergenicity of horse meat in Serum Albumin associated horse meat allergy.

### Lamb-meat

Sensitisation to lamb was detected. Allergic symptoms associated with lamb range from gastrointestinal symptoms to anaphylaxis. Lamb allergy can be caused via sensitisation to Serum Albumin, or via sensitisation to alpha-Gal, a heat resistant sugar in non-primate mammals. Clinical reactions to alpha-Gal often have a delay of 3-6 hours

Include extensive patient training on avoidance measures for mild reactions and the prescription of an emergency kit (including adrenalin autoinjector for severe cases) for severe cases. Heat-treatment, or other approaches such as freeze-drying, can decrease the allergenicity of lamb in serum albumin associated lamb allergy.

### Pork

Sensitisation to pork was detected. Allergic symptoms associated with pork range from gastro-intestinal symptoms to anaphylaxis. Pork allergy can be caused via Sensitisation to Serum Albumin, or via Sensitisation to alpha-Gal, a heat resistant sugar in non-primate mammals. Clinical reactions to alpha-Gal often have a delay of 3-6 hours. Inhalative Sensitisation to Serum Albumin from cat (Fel d 2) can cause the pork-cat syndrome via cross-reaction.

Sus d 1 is a heat-labile allergen from pork. It shows a high degree of cross-reactivity with other Serum Albumins from mammals (e.g. Fel d 2 from cat). The importance of these cross-reactions has to be analysed on a clinical level. Serum albumins are not stable towards heat and digestion.

Include extensive patient training on avoidance measures for mild reactions and the prescription of an emergency kit (including adrenalin autoinjector for severe cases). Heat-treatment, or other approaches such as freeze-drying, can decrease the allergenicity of pork in serum albumin-associated pork allergy.

## Fish

Sensitisation to fish was detected. Allergic symptoms associated with fish include mild to severe anaphylactic reactions after fish consumption as well as respiratory/asthmatic reactions upon exposure to cooking vapours.

Parvalbumins are the major allergens from fish species. The degree of cross-reactivity between different Parvalbumins is high, but not absolute. Parvalbumins are resistant to heat and digestion.  $\alpha$ -Parvalbumin from thornback ray has been described as hypoallergenic.

Include extensive patient training on avoidance measures and the prescription of an emergency kit (including adrenalin autoinjector for severe cases).

## Seafood

### Shrimp

Sensitisation to shrimp was detected. Allergic symptoms associated with shrimp include mild to severe anaphylactic reactions after shrimp consumption as well as respiratory/asthmatic reactions upon exposure to cooking vapours. The degree of cross-reactivity between crustaceans is very high.

Pen m 2 is a member of the Arginine Kinase allergen family and can cause predominately mild reactions. The degree of cross-reactivity to other Arginine Kinases is very high (e.g. Der p 20 from house dust mite & Bla g 9 from cockroach). It is not stable to heat and digestion.

Pen m 3 is a member of the Myosin Light Chain allergen family (MLC). The degree of cross-reactivity between Pen m 3 and other members of the MLC allergen family is unknown, but probably high with other shrimp species and possible with chicken. It is stable to heat and presumably also to digestion.

Include extensive patient training on avoidance measures and the prescription of an emergency kit (including adrenalin autoinjector for severe cases).

## Other

### Latex

Sensitisation to latex was detected. Allergic symptoms associated with latex allergy range from contact urticaria to anaphylaxis. In children with Spina bifida the most frequent manifestation is urticaria and angioedema. In latex allergic health care workers the most common symptoms are of a respiratory nature and local skin reactions.

Hev b 5 is a structural protein whose biological function is unknown. It is the main allergen in different risk groups and is recognized by 92% of health care workers and 56% of patients with Spina bifida. For unknown reasons its prevalence varies from region to region.

Include extensive patient training on avoidance measures and the prescription of an emergency kit (including adrenalin autoinjector for severe cases). The use of replacement by latex-free products (e.g. nitrile gloves) is also strongly advised.

DISCLAIMER: THE PRESENCE OF IgE-ANTIBODIES IMPLIES A RISK OF ALLERGIC REACTIONS AND HAS TO BE ANALYZED IN CONJUNCTION WITH THE CLINICAL HISTORY AND OTHER DIAGNOSTIC TEST RESULTS. THE RAVEN INTERPRETATION GUIDANCE SOFTWARE IS A TOOL TO SUPPORT PHYSICIANS IN THE INTERPRETATION OF ALEX RESULTS. RAVEN COMMENTS DO NOT REPLACE THE DIAGNOSIS BY A PHYSICIAN. NO LIABILITY IS ACCEPTED FOR RAVEN COMMENTS AND RESULTING THERAPEUTIC INTERVENTIONS. THE STATED COMMENTS ARE DESIGNED EXCLUSIVELY FOR ALEX RESULTS.