PRODUCT CATALOG

BULK ALLERGENS AS RAW MATERIAL FOR IVD SYSTEMS

bioallergens

powered by rekom biotech

APRIL 2019

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Index

ABOUT US 1

PRODUCTS 2

INDOOR RECOMBINANT ALLERGENS 2

POLLEN RECOMBINANT ALLERGENS 4

MOLD RECOMBINANT ALLERGENS 8

FOOD RECOMBINANT ALLERGENS ..... 10 new!

QUALITY MANAGEMENT 14

EXTERNAL VALIDATION 15

ALLERGEN MANIPULATION 16

PRODUCT INDEX 17

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About us

Rekom Biotech, as specialised company in the design and development of biomarkers for infectious diseases, presents a new line of recombinant products, Bioallergens. Our recombinant allergens are biomarkers of non-infectious origin intended for the diagnosis of type I allergic disorders.

A wide variety of protein antigens from our environment are proteins coming from food, dust mites, pollens from trees and grasses; and other natural products. These environmental proteins come primarily from non-pathogenic eukaryotic organisms (animals and plants) and are essentially innocuous. However, in some cases, our immune system reacts to them, unintentionally causing damage to our tissues and vital organs that occasionally generates serious systemic pathologies.

The development of recombinant allergens provides new opportunities for the improvement of the diagnosis of immunoglobulin E (IgE) mediated allergies, given that they present capacity for binding these antibodies in a comparable way to natural allergens and generally show good reactivity in *in vitro* diagnostic test. For this reason, recombinant allergens are of a great interest to both the research field and the development of new diagnostic test for IgE quantification in the clinical routine.

The recombinant allergens of Rekom Biotech have been evaluated by means of an external study developed by a group of prestigious allergists at the Virgen de la Macarena Hospital in Seville (Spain), using samples from positive and negative patient sera. In these tests, specific IgE has been determined by the skin prick test (SPT) and the UniCAP® test. From these assays, we obtained incidence data for each bio-marker, which we later compared with that described in the literature, obtaining a very good correlation.

The measure of circulating IgE antibodies specific for a determined allergen provides information about the patient sensitisation to this allergen. In general, low IgE levels would indicate a low probability of developing a clinical disease, while high IgE levels would show a high correlation of developing disease.

Through an adequate diagnostic test incorporating our biomarkers, it would be possible to determine the allergen to which the patient is reacting and the levels of specific IgE to this allergen. This quantification will allow to predict more accurately the chance of the patient developing a disease, and thus the need for appropriate treatment.

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INDOOR RECOMBINANT ALLERGENS

This group includes the allergens present in the feces of dust mites and cockroaches; and in animal dander.

INDOOR RECOMBINANT ALLERGENS

ANIMAL RECOMBINANT ALLERGENS

Dog (*Canis familiaris*)

Allergen name: Can f 1
Biochemical name: lipocalin
References: RAL0016

Allergen name: Can f 5
Biochemical name: arginine esterase, prostatic kallikrein
References: RAL0014

Horse (*Equus caballus*)

Allergen name: Equ c 1
Biochemical name: lipocalin
References: RAL0007

Cat (*Felis domesticus*)

Allergen name: Fel d 1
Biochemical name: uteroglobin (chain 1)
References: RAL0023

DUST MITES RECOMBINANT ALLERGENS

American house (*Dermatophagoides farinae*)

Allergen name: Der f 2
Biochemical name: NPC2 family
References: RAL0013

European house (*Dermatophagoides pteronyssinus*)

Allergen name: Der p 10
Biochemical name: tropomyosin
References: RAL0015

Storage mite (*Lepidoglyphus destructor*)

Allergen name: Lep d 2
Biochemical name: tropomyosin
References: RAL0008

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POLLEN RECOMBINANT ALLERGENS

Pollen is a fine yellowish powder that is transported from one plant to another by wind, birds, insects and other animals. The spread of pollen helps to fertilize plants and causes innumerable allergies throughout the year in many people. This group contains pollens of trees and grasses.

POLLEN RECOMBINANT ALLERGENS

Mugwort (*Artemisia vulgaris*)

Allergen name: Art v 1
Biochemical name: defensin-like protein
References: RAL0005

Allergen name: Art v 3
Biochemical name: non-specific lipid transfer protein type 1 (LTP)
References: RAL0006

Silver birch (*Betula verrucosa*)

Allergen name: Bet v 1
Biochemical name: pathogenesis-related protein (PR-10)
References: RAL0011

Allergen name: Bet v 4
Biochemical name: polcalcin
References: RAL0009

Pellitory-of-the-Wall (*Parietaria judaica*)

Allergen name: Par j 2
Biochemical name: phospholipid transfer protein (LTP)
References: RAL0020

Olive (*Olea europaea*)

Allergen name: Ole e 1
Biochemical name: proteins similar to Ole e 1
References: RAL0012

Allergen name: Ole e 2
Biochemical name: profilin
References: RAL0010

London plane tree (*Platanus acerifolia*)

Allergen name: Pla a 1
Biochemical name: invertase inhibitor
References: RAL0019

Allergen name: Pla a 3
Biochemical name: non-specific lipid transfer protein type 1 (LTP)
References: RAL0021

Russian thistle (*Salsola kali*)

Allergen name: Sal k 1
Biochemical name: pectin methylesterase
References: RAL0018

POLLEN RECOMBINANT ALLERGENS

Timothy grass (*Phleum pratense*)

Allergen name: Phl p 1
Biochemical name: beta-expansin
References: RAL0001

Allergen name: Phl p 5a
Biochemical name: unkown
References: RAL0003, RAL0003BIOT new!

Allergen name: Phl p 5b
Biochemical name: unkown
References: RAL0017

Allergen name: Phl p 7
Biochemical name: polcalcin
References: RAL0002

Allergen name: Phl p 12
Biochemical name: profilin
References: RAL0004

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POLLEN RECOMBINANT ALLERGENS

MOLD RECOMBINANT ALLERGENS

This group contains allergens present in outdoor molds, which live on the trunks and leaves of the trees, and indoor molds, located in warm and humid places such as bathrooms and kitchens.

MOLD RECOMBINANT ALLERGENS

Alternaria rot fungus (*Alternaria alternata*)

Allergen name: Alt a 1
Biochemical name: unkown
References: RAL0025

FOOD RECOMBINANT ALLERGENS

Sometimes, an adverse health effect arise in certain people who are exposed to a given food, arising from a specific immune response to it. The most common form of immune-mediated adverse reactions to foods is type I reactions, which is characterized by the development of IgE against food allergens. This food allergy affects approximately 3% of the population.

These food allergies have increased considerably in the last thirty years due to a major change in our eating habits. For example, an increasingly frequent consumption of food of exotic nature, new ways of preparing food, early diversification of food in babies and the presence in food of new proteins that enhance taste and change colour and consistency of food.

FOOD RECOMBINANT ALLERGENS

CEREAL RECOMBINANT ALLERGENS

Wheat (*Triticum aestivum*)

Allergen name: Tri a 19
Biochemical name: Omega-5 gliadin, seed storage protein
References: RAL0053, RAL0053BIOT
new!

Maize (*Zea mays*)

Allergen name: Zea m 14
Biochemical name: Nonspecific lipid-transfer protein
References: RAL0052BIOT
COMING SOON

FISH RECOMBINANT ALLERGENS

Baltic cod (*Gadus callarias*)

Allergen name: Gad c 1
Biochemical name: beta-parvalbumin
References: RAL0035
new!

MILK RECOMBINANT ALLERGENS

Domestic cattle (*Bos domesticus*)

Allergen name: αS1-casein
Biochemical name: casein
References: RAL0027
new!

Allergen name: αS2-casein
Biochemical name: casein
References: RAL0028
new!

Allergen name: β-casein
Biochemical name: casein
References: RAL0029
new!

Allergen name: k-casein
Biochemical name: casein
References: RAL0030
COMING SOON

Allergen name: α-lactalbumin
Biochemical name: lactalbumin
References: RAL0031
COMING SOON

Allergen name: β-lactoglobulin
Biochemical name: lactoglobulin
References: RAL0032
COMING SOON

FOOD RECOMBINANT ALLERGENS

SEAFOOD RECOMBINANT ALLERGENS

Brown shrimp (*Penaeus aztecus*)

Allergen name: Pen a 1
Biochemical name: Tropomyosin
References: RAL0036

COMING SOON

Japanese flying squid (*Todarodes pacificus*)

Allergen name: Tod p 1
Biochemical name: Tropomyosin
References: RAL0037

COMING SOON

ROSACEOUS RECOMBINANT ALLERGENS

Apple (*Malus domestica*)

Allergen name: Mal d 3
Biochemical name: Non-specific lipid transfer protein type 1 (nsLTP1)
References: RAL0039

COMING SOON

Peach (*Prunus persica*)

Allergen name: Pru p 3
Biochemical name: Non-specific lipid transfer protein 1 (nsLTP1)
References: RAL0038

COMING SOON

FOOD RECOMBINANT ALLERGENS

NUTS RECOMBINANT ALLERGENS

Peanut, groundnut (*Arachis hypogaea*)

Allergen name: Ara h 2
Biochemical name: Conglutin (2S albumin)
References: RAL0040

COMING SOON

Allergen name: Ara h 9
Biochemical name: Non-specific lipid-transfer protein type 1
References: RAL0041

COMING SOON

English walnut (*Juglans regia*)

Allergen name: Jug r 1
Biochemical name: 2S albumin seed storage protein
References: RAL0045

COMING SOON

Allergen name: Jug r 3
Biochemical name: Non-specific lipid transfer protein type 1 (nsLTP1)
References: RAL0044

COMING SOON

Hazelnut (*Corylus avellana*)

Allergen name: Cor a 1
Biochemical name: Pathogenesis-related protein, PR-10, Bet v 1 family member
References: RAL0043

COMING SOON

Allergen name: Cor a 8
Biochemical name: Non-specific lipid transfer protein type 1
References: RAL0042

COMING SOON

Chestnut (*Castanea sativa*)

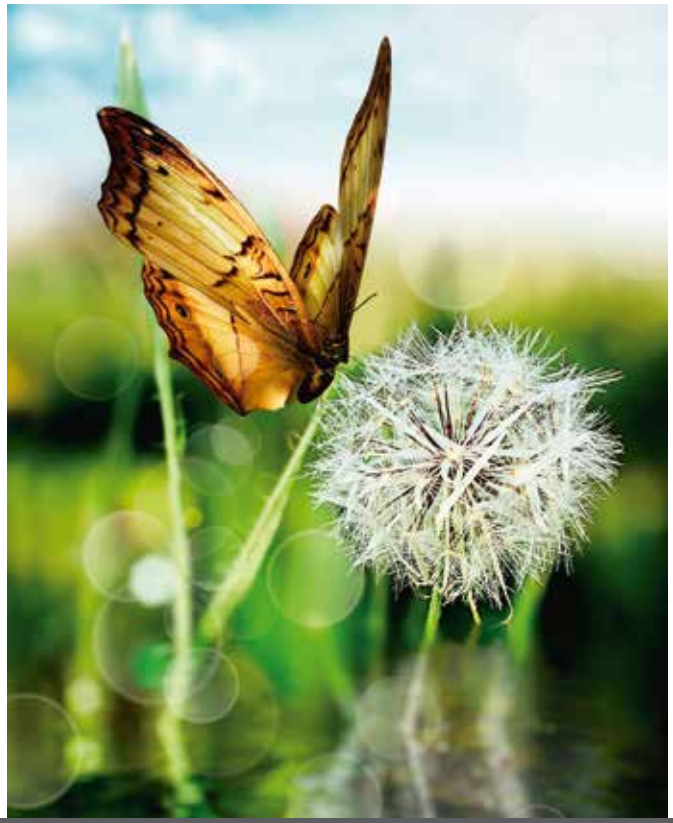
Allergen name: Cas s 5
Biochemical name: Chitinase
References: RAL0046

COMING SOON

Quality management

Rekom Biotech is committed to ensure the highest quality level in the design and production of recombinant allergens intended for the *in vitro* diagnosis of type I allergic disorders.

Rekom Biotech products are designed, developed, produced and distributed according to our Quality Management System that is certified by ISO 9001 standards. Rekom recombinant allergens are always produced according to Standard Operating Procedures (SOPs) and undergo rigorous quality controls in our laboratories.



Each lot is subjected to various analyses:

- Concentration detection by spectrophotometry

  The measurement of the protein concentration is performed with the theoretical extinction coefficient of the recombinant protein obtained from Gill and vonHippel, 1989.

  For proteins which do not contain any Trp residues, experience shows that this could result in more than 10% error in the computed extinction coefficient. Therefore, we measure the protein concentration by using the colorimetric assay based on the interaction between Coomassie brilliant blue and the arginine and aromatic residues (Bradford Method) and its maximum absorption shifts from 470 nm to 595 nm (Bradford, 1976).

- Purity and integrity determination by SDS-PAGE

- Aggregates presence analysed by size-exclusion chromatography (SEC)

External validation

Our bioallergens have been evaluated in an external study carried out at a Spanish hospital by a group of allergists with positive and negative serum samples from patients. The evaluation of the recombinant allergens has been performed by means of an *in-house* ELISA assay. In this immunoassay, it has been determined the presence of specific IgE in sera that had previously been validated by skin prick testing (SPT) and the UniCAP® test. The sera panels specific for each group of allergens were composed of 25 positive sera and 10 total IgE negative specimen sera.

The following chart shows the good correlation found between the incidence rates described in bibliography and the incidence rates found in the external study carried out by the hospital with our bioallergens:

GROUP	ALLERGEN	REFERENCE	INCIDENCE RATES	
			BIBLIOGRAPHY	HOSPITAL VALIDATION
Timothy grass	Phl p 1	RAL0001	70%-100%	92%
	Phl p 5a	RAL0003	60%-93%	60%
	Phl p 5b	RAL0017	60%-93%	56%
	Phl p 7	RAL0002	10%	44%
	Phl p 12	RAL0004	20%	36%
Olive	Ole e 1	RAL0012	70%	100%
	Ole e 2	RAL0010	20%-47%	40%
Animal epithelial	Can f 1	RAL0016	90%	84%-100%
	Fel d 1	RAL0023	90%	76%-84%
Dust mites	Der f 2	RAL0013	98%	78%
	Der p 10	RAL0015	5.6%	5.6%
	Lep d 2	RAL0008	>75%	72%
Russian thistle	Sal k 1	RAL0018	66.66%	67.67%

ONGOING RESEARCH FOR OTHER ALLERGEN GROUPS

Allergen manipulation

STORAGE

Protein is shipped with dry ice. Upon arrival, it should be aliquoted in order to avoid repeated freezing and thawing cycles and stored at -20ºC to -80ºC. Proteins should be maintained frozen at high concentrations.

DEFROST

In order to defrost the protein, maintain the aliquot at 25ºC without shaking to avoid aggregation.

MANIPULATION

Before making test dilutions and after the protein has been defrosted, it is recommended to remove possible protein aggregates by centrifuging the stock solution, avoiding alterations in the immobilisation of the biomolecule to the solid surface.

During shipment, small volumes of product will occasionally become entrapped in the seal of the product vial. For products with volumes of 200 µl or less, we recommend tapping the vial on a hard surface or briefly centrifuging the vial in a tabletop centrifuge to dislodge any liquid in the containers cap. Although recombinant allergens are expressed in *Pichia pastoris* and non-pathogenic *E. coli*, in which bacterial integrity is destroyed during purification, the allergen preparation should be handled as potentially infectious.

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Product Index

COMING SOON α-lactalbumin 11
new! αS1-casein 11
new! αS2-casein 11
new! β-casein 11
COMING SOON β-lactoglobulin 11
COMING SOON κ-casein 11

Alt a 1.....9
Art v 1 5
Art v 3 5
COMING SOON Ara h 2 13
COMING SOON Ara h 9 13

Bet v 1 5
Bet v 4 5

Can f 1 3
Can f 5 3
COMING SOON Cas s 5 13
COMING SOON Cor a 1 13
COMING SOON Cor a 8 13

Der f 2 3
Der p 10 3

Equ c 1 3

Fel d 1 3

new! Gad c 1 11

COMING SOON Jug r 1 13
COMING SOON Jug r 3 13

COMING SOON Lep d 2 3

Mal d 3 12

Ole e 1 5
Ole e 2 5

Par j 2 5
COMING SOON Pen a 1 12
Phl p 1 6
Phl p 12 6
new! Phl p 5a 6
Phl p 5b 6
Phl p 7 6
Pla a 1 5
Pla a 3 5
COMING SOON Pru p 3 12

Sal k 1 5

COMING SOON Tod p 1 12
new! Tri a 19 11

COMING SOON Zea m 14 11

Certain uses of some of these products may violate existing or pending patent claims in a specific country. It is the user\'s responsibility to determine if the use of this product constitutes such a violation in the country where the recombinant allergen is going to be used. Rekom Biotech is not responsible for patent infringements or other violations that may occur by the use of this product in a specific country.

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