Food Allergens

It is estimated that one in three of the total UK population (almost 20 million) will develop an allergy at some point in their lives (Royal College of Physicians June 03). Potential causes include food, insect bites, drugs and latex. A food allergy is an immune system response to a food that the body mistakenly believes is harmful. Once the immune system decides that a particular food is harmful, it creates specific antibodies to it.

The next time the individual eats that food, the immune system releases massive amounts of chemicals, including histamine, in order to protect the body. These chemicals trigger a cascade of allergic symptoms that can affect the respiratory system, gastrointestinal tract, skin, or cardiovascular system.

The most common causes (accounting for >90%) of food allergies are:
Peanut and nut, milk, eggs, seeds (such as sesame) fish, shellfish, soy and wheat.

Milk

	Analytical Target	UKAS Accredited	Lower Limit of Quantification	Upper Limit of Quantification	LOQ units	Sample Size
Quantitative Enzyme Linked Immuno-Sorbent Assay (ELISA) methods						
MILK						
Casein	Casein	NO	2.5ppm	67.5ppm	ppm Casein	50g
b-lactoglobulin	b-lactoglobulin in whey proteins	NO	10ppb	400ppb	ppm b-lactoglobulin	50g
Lactose	See HPLC methods					

Nuts & Seeds

	Analytical Target	UKAS Accredited	Lower Limit of Quantification	Upper Limit of Quantification	LOQ units	Sample Size
Quantitative Enzyme Linked Immuno-Sorbent Assay (ELISA) methods						
NUTS AND SEEDS						
Peanut	Conarachin-A	YES	1ppm	20ppm	ppm nut	50g
Almond	Almond protein	YES	2.5ppm	20ppm	ppm nut	50g
Hazelnut	Hazelnut protein	NO	2.5ppm	20ppm	ppm nut	50g
Macadamia	Macadamia protein	NO	1.0ppm	27ppm	ppm nut	50g
Pistachio	Pistachio protein. Kit cross reacts with cashew	NO	1.0ppm	25ppm	ppm protein	50g
Walnut	Walnut protein	NO	2ppm	50ppm	ppm nut	50g
Cashew	Cashew protein	NO	2ppm	50ppm	ppm nut	50g
Sesame	Sesame storage protein allergens	NO	0.5ppm	5ppm	ppm protein	50g
Lupin	Lupin flour proteins	NO	1ppm	27ppm	ppm Lupin	50g
Mustard	White (yellow), black & brown mustard seed proteins Kit cross reacts with rapeseed	NO	1ppm	10ppm	ppm protein	50g

Please refer to the UKAS Schedule of Accreditation for the specific matrices.

Gluten, Egg & Soya

	Analytical Target	UKAS Accredited	Lower Limit of Quantification	Upper Limit of Quantification	LOQ units	Sample Size
Quantitative Enzyme Linked Immuno-Sorbent Assay (ELISA) methods						
Gluten	R5 antibody / Mendez cocktail ELISA for quantitative analysis of prolamins from wheat (gliadins), rye (secalin)and barley (hordein)	YES	5ppm	80ppm	ppm gluten	50g
Gluten: Recommended Approach for highly processed (hydrolysed) products e.g. Soya sauce	Competitive R5 antibody ELISA for quantitative analysis of peptide fragments of prolamins from wheat (gliadins), rye (secalin) and barley (hordein)	NO	5ppm	135ppm	ppm gliadin	50g
Egg	Egg White protein	YES	0.5ppm	10ppm	ppm protein	50g
Soya	Soya protein	YES	2.5ppm	25ppm	ppm protein	50g

Please refer to the UKAS Schedule of Accreditation for the specific matrices.

Low Level Lactose & Sulphur Dioxide

	Analytical Target	UKAS Accredited	Lower Limit of Quantification	Upper Limit of Quantification	LOQ units	Sample Size
Low Level Lactose	Lactose is determined by ion-exchange chromatography with specific electrochemical detection.	YES	Limit Of Detection = 50ppm			50g
Sulphur Dioxide / Sulphite	Sulphur dioxide is determined by a procedure based on the modified Monier-Williams method -distillation of SO2 into a hydrogen peroxide trapping solution. This is followed by highly specific determination of the sulphate produced using ion chromatography (i.e. NOT TITRATION which is less specific).	YES	Limit Of Detection = 2mg/Kg			50g

Please refer to the UKAS Schedule of Accreditation for the specific matrices.

Wheat DNA

	Analytical Target	UKAS Accredited	Lower Limit of Quantification	Upper Limit of Quantification	LOQ units	Sample Size
WHEAT	Wheat DNA detection utilising Polymerase Chain Reaction (PCR) Analysis	NO	Limit Of Detection = Approx 10ppm			50g

Nut Allergy – A Case Study

The Challenge
Our client had received reports that a consumer known to have a severe peanut allergy, had been hospitalised following an anaphylactic reaction. The food item implicated as the cause of the attack, was that of our client. Immediate testing was required to verify the presence or absence of peanut proteins in the food samples concerned.

The Solution
Samples were immediately delivered to Premier Analytical Services. In line with the customer's immediate concerns a qualitative test for peanut protein was conducted. Some five hours later, when all samples but one tested negative for the presence of peanut proteins, additional samples relevant to the one which had already tested positive were submitted for further investigation using quantitative techniques.

The Result
The evidence provided by Premier Analytical Services enabled our client to identify the source of the peanut contamination. The supplier involved addressed the problem and is continuing to submit samples for testing to ensure products remain peanut free. On this occasion a product recall was not necessitated but labelling modifications were carried out.

The Secret
Premier Analytical Services has remained abreast of emerging tests and methodologies. We have been able to respond rapidly and professionally to the immediate needs of our clients by having the peanut protein detection kits set-up and fully validated.

Anaphylaxis Campaign
Supporting people at risk of severe allergies

To discover more on Anaphylaxis please click below.

Read More