

COMMON ALLERGENS OF SOUTH AFRICA – PRODUCT TESTING

Allergen	Method	Specificity	Limit of detection	Range of quantification	Lead Time (Working days)
Milk (total)	Quantitative ELISA	Milk protein	<2.5 ppm milk (equiv. to <0.9 ppm milk protein)	2.5 – 25.0 ppm milk (equiv. to 0.9 – 9.0 ppm milk protein)	5 - 7
Whey	Quantitative ELISA	β-Lactoglobulin protein	<0.5 ppm β-Lactoglobulin (equiv. to <1.0 whey protein)	0.5 - 13.5 ppm β-Lactoglobulin (equiv. to 1.0 – 27.0 ppm whey protein)	5 - 7
Casein	Quantitative ELISA	Casein protein	<0.5 ppm casein (0.24 ppm casein in wine)	0.5 - 13.5 ppm casein	On request* TBC
Egg (raw & processed)	Quantitative ELISA	Egg protein	<2.5 ppm egg	2.5 – 25 ppm egg	5 - 7
Egg total and egg white protein (in wine)	Quantitative ELISA	Egg protein	0.27 ppm whole egg (equiv. to 0.07 ppm egg white protein)	0.5 – 13.5 ppm egg (equiv. to 0.13 – 3.75 ppm egg white protein)	On request* TBC
Lysozyme (hen's egg protein) (in wine)	Quantitative ELISA	Lysozyme	0.02 ppm lysozyme	0.05 – 4.0 ppm lysozyme	On request* TBC
Soya	Quantitative ELISA	Soya protein	<2.5 ppm (<1.175 ppm soya protein).	2.5 - 25.0 ppm (1.175 – 11.75 ppm soya protein).	5 - 7
Soya	Qualitative PCR	Soy-specific DNA	<1 ppm Soya DNA	Qualitative detection	10 – 14
Crustacean	Quantitative ELISA	Crustacean protein	2.0 ppm crustacean	20 - 160 ppm crustacean	On request* TBC
Crustacean	Qualitative PCR	Crustacean-specific DNA (including prawn, shrimp, crab, lobster and crayfish)	<0.01% crustacean DNA	Qualitative detection	On request* TBC
Gluten (from wheat, barley, rye)	Quantitative ELISA	Gluten (Gliadin)	<3 ppm gluten (<1.5 ppm gliadin)	5 - 80 ppm gluten (2.5 - 40 ppm gliadin)	5 - 7
Gluten (from wheat, barley, rye) in hydrolysed or fermented products)	Quantitative ELISA	Gluten-derived peptides	<2.72 ppm gluten (<1.36 ppm gliadin)	10 – 270 ppm gluten (5 - 135 ppm gliadin)	On request* TBC
Wheat	Qualitative PCR	Wheat-specific DNA	< 50 pg genomic DNA	Qualitative detection	10 - 14
Rye	Qualitative PCR	Rye-specific DNA	< 50 pg rye DNA	Qualitative detection	10 - 14
Fish	Qualitative PCR	Fish-specific DNA	0.4 ppm fish DNA	Qualitative detection	10 - 14
Peanut	Quantitative ELISA	Peanut protein	<2.5 ppm peanut	2.5 – 20 ppm peanut	5 - 7
Almond	Quantitative ELISA	Almond protein	<2.5 ppm almond	2.5 – 20 ppm almond	5 - 7
Cashew nut	Qualitative PCR	Cashew-specific DNA	0.4 ppm cashew DNA	Qualitative detection	10 - 14
Hazelnut	Qualitative PCR	Hazelnut-specific DNA	1.0 ppm Hazelnut DNA	Qualitative detection	10 - 14

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Pecan nut	Qualitative PCR	Pecan-specific DNA	<10 pg genomic DNA	Qualitative detection	10 - 14
Pistachio nut	Qualitative PCR	Pistachio-specific DNA	To be determined	Qualitative detection	10 - 14
Macadamia nut	Quantitative ELISA	Macadamia nut protein	<1.0 ppm Macadamia	1.0 - 27.0 ppm Macadamia nut	On request* TBC
Walnut	Qualitative PCR	Walnut-specific DNA	1.0 ppm walnut DNA	Qualitative detection	10 - 14

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OTHER ALLERGENS – PRODUCT TESTING

Allergen	Method	Specificity	Limit of detection	Range of quantification	Lead Time (Working days)
Celery	Qualitative PCR	Celery-specific DNA	0.4 ppm celery DNA	Qualitative detection	10 - 14
Mustard	Qualitative PCR	<i>Brassica</i> -specific DNA	0.4 ppm mustard DNA	Qualitative detection	10 - 14
Mustard	Quantitative ELISA	Mustard protein	<0.5 ppm mustard	0.5 – 13.5 ppm mustard	On request* TBC
Sesame seed	Quantitative ELISA	Sesame protein	<2.5 sesame seed	2.5 – 20 ppm sesame	On request* TBC

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ALLERGENS – SWAB TESTING

Allergen	Method	Specificity	Limit of detection	Range of quantification	Lead Time (Working days)
Milk (total)	Quantitative ELISA	Milk protein	<2.5 ppm milk (equiv. to <0.9 ppm milk protein)	Qualitative detection	5 - 7
Whey	Quantitative ELISA	β-Lactoglobulin protein	<0.5 ppm β-Lactoglobulin (equiv. to <1.0 whey protein)	Qualitative detection	5 - 7
Casein	Quantitative ELISA	Casein protein	<0.5 ppm casein (0.24 ppm casein in wine)	Qualitative detection	On request* TBC
Egg (raw & processed)	Quantitative ELISA	Egg protein	<2.5 ppm egg	Qualitative detection	5 - 7
Egg total and egg white protein (in wine)	Quantitative ELISA	Egg protein	0.27 ppm whole egg (equiv. to 0.07 ppm egg white protein)	Qualitative detection	On request* TBC
Lysozyme (hen's egg protein) (in wine)	Quantitative ELISA	Lysozyme	0.02 ppm lysozyme	Qualitative detection	On request* TBC
Soya	Quantitative ELISA	Soya protein	<2.5 ppm (<1.175 ppm soy protein).	Qualitative detection	5 - 7
Soya	Qualitative PCR	Soy-specific DNA	<1 ppm Soya DNA	Qualitative detection	10 - 14
Crustacean	Quantitative ELISA	Crustacean protein	2.0 ppm crustacean	Qualitative detection	On request* TBC
Crustacean	Qualitative PCR	Crustacean-specific DNA (including prawn, shrimp, crab, lobster and crayfish)	<0.01% crustacean DNA	Qualitative detection	On request* TBC
Gluten (from wheat, barley, rye)	Quantitative ELISA	Gluten (Gliadin)	<3 ppm gluten (<1.5 ppm gliadin)	Qualitative detection	5 - 7
Gluten (from wheat, barley, rye) in hydrolysed or fermented products)	Quantitative ELISA	Gluten-derived peptides	<2.72 ppm gluten (<1.36 ppm gliadin)	Qualitative detection	On request* TBC
Wheat	Qualitative PCR	Wheat-specific DNA	< 50 pg genomic DNA	Qualitative detection	10 - 14
Rye	Qualitative PCR	Rye-specific DNA	< 50 pg rye DNA	Qualitative detection	10 - 14
Fish	Qualitative PCR	Fish-specific DNA	0.4 ppm fish DNA	Qualitative detection	10 - 14
Peanut	Quantitative ELISA	Peanut protein	<2.5 ppm peanut	Qualitative detection	5 - 7
Almond	Quantitative ELISA	Almond protein	<2.5 ppm almond	Qualitative detection	5 - 7
Cashew nut	Qualitative PCR	Cashew-specific DNA	0.4 ppm cashew DNA	Qualitative detection	10 - 14
Hazelnut	Qualitative PCR	Hazelnut-specific DNA	1.0 ppm Hazelnut DNA	Qualitative detection	10 - 14

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Pecan nut	Qualitative PCR	Pecan-specific DNA	<10 pg genomic DNA	Qualitative detection	10 - 14
Pistachio nut	Qualitative PCR	Pecan-specific DNA	To be determined	Qualitative detection	10 - 14
Macadamia nut	Quantitative ELISA	Macadamia nut protein	<1.0 ppm Macadamia	Qualitative detection	On request* TBC
Walnut	Qualitative PCR	Walnut-specific DNA	1.0 ppm walnut DNA	Qualitative detection	10 - 14
Celery	Qualitative PCR	Celery-specific DNA	0.4 ppm celery DNA	Qualitative detection	10 - 14
Mustard	Qualitative PCR	<i>Brassica</i> -specific DNA	0.4 ppm mustard DNA	Qualitative detection	10 - 14
Mustard	Quantitative ELISA	Mustard protein	<0.5 ppm mustard	Qualitative detection	On request* TBC
Sesame seed	Quantitative ELISA	Sesame protein	<2.5 sesame seed	Qualitative detection	On request* TBC

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ANIMAL SPECIES DETECTION**Species-specific - detection in mixed ingredient commodities (detection of adulteration)**

Example of client request: *"Please confirm that the sample is not contaminated / adulterated with an undeclared species"*.

Description of analysis: Using specially designed species-specific primers, the PCR can be used to detect the DNA of certain species in a mixed meat matrix.

Animal species	Method	Specificity	Limit of detection	Range of quantification	Lead Time (Working days)
Fish-specific detection – teleosts (bony fish)-species	Qualitative PCR	Fish-specific DNA	<20 ppm fish DNA	Qualitative detection	10 - 14
Crustacean-specific detection	Qualitative PCR	Crustacean-specific DNA (including prawn, shrimp, crab, lobster and crayfish)	<0.01% crustacean DNA	Qualitative detection	10 - 14
DNA-based screening for 24 animal species Detection and differentiation of: Cattle (Beef, Bison) Water buffalo, Pork, Sheep, Goat, Equine (Horse, Donkey), Hare, Rabbit, Chicken, Turkey, Goose, Mallard Duck, Muscovy Duck, Pheasant, Ostrich, , Kangaroo, Springbok, Fallow Deer, Red Deer, Canine, Cat, Camel, Reindeer and Roe Deer	PCR-microarray	Animal specific DNA	Not applicable	Qualitative detection	10 - 14

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ANIMAL SPECIES IDENTIFICATION
DNA sequencing for species identification in single ingredient commodities

Example of a client request: *“Please confirm that the meat sample is the animal species we expect it to be”.*

Description of analysis: DNA sequencing can be conducted on queried specimens and generated DNA sequences can be compared to known DNA sequences as a means of confirming the identification of the following species.

Animal species	Method	Lead Time (Working days)
Fish species identification	DNA sequencing	10 - 14
Crustacean species identification	DNA sequencing	10 - 14
Bovine (beef) species identification	DNA sequencing	10 - 14
Porcine (pork) species identification	DNA sequencing	10 - 14
Ovine (sheep) species identification	DNA sequencing	10 - 14
Game species identification (e.g. kudu, impala, springbok, blesbok, bontebok, duiker etc.)	DNA sequencing	10 - 14
Goat species identification	DNA sequencing	10 - 14
Chicken species identification	DNA sequencing	10 - 14
Turkey species identification	DNA sequencing	10 - 14
Ostrich species identification	DNA sequencing	10 - 14
Duck species identification	DNA sequencing	10 - 14
Crocodile species identification	DNA sequencing	10 - 14
Donkey species identification	DNA sequencing	10 - 14
Horse species identification	DNA sequencing	10 - 14
Buffalo species identification (African buffalo <i>Syncerus Caffer</i> and water buffalo (<i>Bubalus bubalis</i>))	DNA sequencing	10 - 14
Rabbit species identification	DNA sequencing	10 - 14

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