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RMA FST Enhanced — Accession: 772098

Healthcare Professional

Wellness Institute
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Patient

[redacted]

Age: 45
Date of Birth: 1977/01/10
Gender: Female

RMA FST™
IgG FOOD SENSITIVITY TEST

FOOD GROUP Report

RESULT STATUS	NOTE: Results are reported in U/mL. The limits assigned to individual antigens are based on a statistical analysis of a Canadian population
NORMAL	The upper limit for assigning **Normal** status varies by antigen. Results <= 15 U/mL are reported as <15.
BORDERLINE	The upper and lower limits for assigning **Borderline** status vary by antigen.
ELEVATED	The lower limit for assigning **Elevated** status varies by antigen. Results >= 160 U/mL are reported as >160.

Dairy / Egg

<15	Alpha-Lactalbumin (whey)	<15	Beta-Lactoglobulin (whey)	95	Casein
106	Egg White	22	Egg Yolk	<15	Milk (Buffalo)
126	Milk (Cow)	65	Milk (Goat)	81	Milk (Sheep)

Grains

85	Barley	30	Couscous	27	Durum Wheat
30	Gliadin	33	Malt	18	Oat
<15	Rye	<15	Spelt	43	Wheat
<15	Wheat Bran				

Grains (Gluten-Free)

<15	Amaranth	<15	Buckwheat	33	Corn
<15	Millet	<15	Polenta	<15	Quinoa
<15	Rice	<15	Tapioca		

Fruit

<15	Apple	<15	Apricot	<15	Avocado
<15	Banana	<15	Black Currant	<15	Blackberry
<15	Blueberry	<15	Cherry	17	Cranberry
<15	Date	<15	Fig	<15	Grape (Black/Red/White)
<15	Grapefruit	<15	Guava	<15	Kiwi
<15	Lemon	<15	Lime	<15	Lychee
<15	Mango	<15	Melon (Galia/Honeydew)	<15	Mulberry
<15	Nectarine	<15	Olive	22	Orange
<15	Papaya	<15	Peach	<15	Pear
<15	Pineapple	17	Plum	<15	Pomegranate

Testing performed at Burnaby Reference Laboratory, 3680 Gilmore Way, Burnaby, BC V5G 4V8

Fruit

<15	Raisin	15	Raspberry	<15	Red Currant
<15	Rhubarb	<15	Strawberry	<15	Tangerine
<15	Watermelon				

Vegetables

<15	Artichoke	<15	Arugula	<15	Asparagus
<15	Beet	<15	Bell Peppers	<15	Broccoli
<15	Brussels Sprout	<15	Cabbage (Red)	17	Cabbage (Savoy/White)
<15	Carrot	<15	Cauliflower	<15	Celery
<15	Chard	<15	Chicory	<15	Cucumber
<15	Eggplant	<15	Fennel (Leaf)	<15	Leek
<15	Lettuce	<15	Onion	69	Potato
19	Radish	<15	Shallot	<15	Spinach
30	Squash (Butternut/Carnival)	<15	Squash, Summer	<15	Sweet Potato
<15	Tomato	<15	Turnip	<15	Watercress
<15	Yuca				

Fish / Seafood

15	Alga Espaguette	<15	Alga Wakame	<15	Anchovy
<15	Barnacle	<15	Bass	<15	Carp
<15	Caviar	22	Clam	<15	Cockle
<15	Cod	<15	Crab	<15	Cuttlefish
<15	Eel	<15	Haddock	<15	Hake
<15	Herring	<15	Lobster	<15	Mackerel
<15	Monkfish	17	Mussel	<15	Octopus
16	Oyster	<15	Perch	<15	Pike
<15	Plaice	<15	Razor Clam	<15	Salmon
<15	Sardine	<15	Scallop	<15	Sea Bream (Gilthead)
18	Sea Bream (Red)	<15	Shrimp/Prawn	25	Snail (Sea Snail/Winkle)
<15	Sole	<15	Spirulina	19	Squid
<15	Swordfish	<15	Trout	<15	Tuna
<15	Turbot				

Meat

<15	Beef	<15	Chicken	<15	Duck
<15	Goat	<15	Horse	<15	Lamb
<15	Ostrich	<15	Ox	<15	Partridge
<15	Pork	<15	Quail	<15	Rabbit
<15	Turkey	<15	Veal	<15	Venison
<15	Wild Boar				

Herbs / Spices

<15	Aniseed	<15	Basil	<15	Bayleaf
<15	Camomile	<15	Cayenne	<15	Cinnamon
<15	Clove	<15	Coriander (Leaf)	<15	Cumin
<15	Curry (Mixed Spices)	<15	Dill	<15	Garlic
<15	Ginger	22	Ginkgo	<15	Ginseng
<15	Hops	<15	Licorice	<15	Marjoram

Testing performed at Burnaby Reference Laboratory, 3680 Gilmore Way, Burnaby, BC V5G 4V8

Herbs / Spices

<15	Mint	22	Mustard Seed	<15	Nettle
<15	Nutmeg	<15	Parsley	<15	Peppercorn (Black/White)
<15	Peppermint	<15	Red Chili Pepper	<15	Rosemary
<15	Saffron	<15	Sage	<15	Tarragon
<15	Thyme	<15	Vanilla		

Nuts / Seeds / Legumes

58	Almond	20	Bean (Broad)	<15	Bean (Green)
<15	Bean (Red Kidney)	29	Bean (White Haricot)	27	Brazil Nut
<15	Canola	28	Cashew Nut	<15	Chestnut
<15	Chickpea	<15	Coconut	45	Flax Seed
30	Hazelnut	<15	Lentil	<15	Macadamia Nut
80	Pea	76	Peanut	<15	Pine Nut
33	Pistachio	<15	Sesame Seed	63	Soy Bean
17	Sunflower Seed	<15	Tiger Nut	<15	Walnut

Miscellaneous

35	Agar Agar	21	Aloe Vera	<15	Cane Sugar
<15	Caper	<15	Carob	<15	Cocoa Bean
<15	Coffee	34	Cola Nut	<15	Honey
15	Mushroom	<15	Tea (Black)	<15	Tea (Green)
<15	Transglutaminase	19	Yeast (Baker's)	48	Yeast (Brewer's)

Note: Quantification of Food Specific IgG has been utilized in research settings to assess and investigate Type III hypersensitivity. Measurement of food specific IgG is not a diagnostic indicator of IgE (classical or type I) allergy and should not be used for this purpose. Measurement of Candida albicans IgG levels is not a diagnostic indicator of Candidiasis. Research studies have shown levels of Candida albicans IgG in the circulation to have some Correlation with the degree of its colonization in the gut. Use of repeat serum IgG measurements to monitor declining Candida albicans burden is not recommended. The Burnaby Reference Laboratory is ISO 15189 accredited by The Institute of Quality Management in Healthcare for this class of test. The tests are fully accredited by the Diagnostic Accreditation Program.

IgG FOOD REACTIONS VS IgE FOOD ALLERGIES: IgG food reactions differ significantly from classic IgE food allergies. IgE food allergies are immediate reactions that occur within minutes or hours of consuming a food and may include serious reactions like hives, difficulty breathing and anaphylaxis. In contrast, an IgG food sensitivity is a delayed reaction that occurs hours to days after the food is consumed, with symptoms that may not appear for days or months. Lack of an IgG antibody response to a specific food does not rule out the possibility that the food may elicit an IgE reaction (food allergy). Patients should continue to avoid foods to which they have a known IgE food allergy. Conversely, elevated IgG to a specific food is not diagnostic of IgE food allergy. If symptoms (e.g. hives, difficult breathing) are suggestive of food allergy, the patient should be referred to an Allergist Specialist for specific IgE testing via ImmunoCAP.

IgG REACTIONS: IgG reactions are food sensitivities, not food allergies. When a reactive food is consumed, the IgG antibody forms a complex with the food antigen. Normally, the body is able to eliminate these antibody-antigen complexes, but with excess antigen, small complexes tend to deposit in blood vessel walls where they can cause tissue injury via the release of inflammatory mediators [Brantzaeg 1997]. Over time, this tissue injury may contribute to the development of a variety of health conditions. Research has shown that elimination of IgG reactive foods from the diet improves a variety of health conditions including irritable bowel syndrome and migraine headaches [Atkinson, Alpay]. Eliminating IgG reactive foods has also been reported to help with eczema, mood disturbances, weight gain and other digestive disturbances [Mullin, Lewis, Bentz].

NORMAL REACTIONS: A normal reaction to a food antigen may indicate lack of recent exposure to that food. Therefore, under circumstances of complete avoidance, it is impossible to determine whether the food(s) avoided would elicit a reaction if consumed recently. It is important to note that a normal reaction to a specific food does not mean it can be safely consumed by someone who has previously had a serious reaction to that specific food. Serious reactions to foods (e.g. anaphylaxis or hives) are caused by IgE antibodies, not IgG. Therefore, a normal IgG reaction to a known food allergen is not an indication the tested food is safe to consume.

PATIENT HAS A REACTION TO ONE OR MORE FOOD ANTIGENS NOT CONSUMED REGULARLY: It is possible to have elevated IgG to foods not recently consumed, or to foods that have been specifically avoided (i.e. due to serious previous IgE reaction). Elevated IgG in this circumstance may be due to panallergen reactions [refer to the RMA FST Food Sensitivities and Cross-Reactions document], or to an abundance of the IgG4 subtype antibody, which acts on mast cells and may have a protective effect for IgE reactions and antibodies may remain in circulation for 18 months even with no exposure [Mullin].

GOAT'S MILK AND/OR SHEEP'S MILK ARE BORDERLINE OR ELEVATED but patient may have never consumed: In vitro studies have shown extensive cross reactivity between milks from ruminant species. Significant amino acid sequence homology between milk from cows, goats and sheep mean cross-reactivity is highly probable [URL: www.uptodate.com/contents/milk-allergy-management. Accessed June 11, 2016]. Clinical research has found that a significant percentage of cow's milk allergic patients also react to goat and sheep milks [Pediatr Allergy Immunol. 2012 Mar;23(2):128-32].

WHEAT IS BORDERLINE OR ELEVATED AND WHEAT BRAN IS NORMAL: Wheat is a 42 chromosome member of the Triticum genus that is comprised of the whole cereal grain; endosperm, aleruone and pericarp. Wheat bran is the hard exterior coating of the wheat grain (aleurone and pericarp) that contains a high percentage of fibre and fatty acids. The difference in reactivity between wheat and wheat bran may be explained by the presence of allergenic proteins in the endosperm of whole wheat [Clin Exp Allergy. 1990;20(5):501-509], versus fibre and fatty acids found in the exterior shell of the wheat bran.

CORN IS BORDERLINE OR ELEVATED AND POLENTA IS NORMAL: Polenta is a cooked dish made from cornmeal. Since the application of heat denatures proteins, it is possible for the cooked form (polenta) to elicit a different immunological response than the uncooked or raw form (corn) of the same food. It is important to note however, that packaged and uncooked polenta grain (i.e. cornmeal) is different from cooked polenta, and should be avoided in its uncooked state. Food sources of corn include: artificial colours and flavours, baking powder, bleached white flour, cake mixes, caramel colour/flavouring, confectioners sugar, corn alcohol, corn chips, corn extract, corn flour, corn oil, corn pone, corn starch, corn syrup, gravy, grits, hominy,maize, modified corn starch, modified food starch, popcorn, tortillas. Corn may also be present in various sugars including: dextrose, fructose, glucose, maltose, sorbitol, saccharin, sucrose, sucralose, and xylitol. Note: corn may be present in small amounts in many products, but not appear on a list of ingredients.

AGAR AGAR IS BORDERLINE OR ELEVATED: Agar agar is used as a thickener, gelling agent, texturizer, moisturizer, emulsifier, flavor enhancer, and absorbent and is an allowed additive in certified organic foods. Hidden and/or minor sources of agar agar may elicit an IgG response, but the limited exposure to antigen means that it is unlikely to result in a clinical effect. Therefore, unless the clinician determines otherwise, reactions to agar agar rarely warrant strict avoidance of trace amounts.

COLA NUT IS BORDERLINE OR ELEVATED: Cola Nut may be found in non-alcoholic and alcoholic beverages, baked goods, puddings, candies and frozen dairy. It is typically referred to generically as a "natural flavouring." These hidden and/or minor sources of cola nut may elicit an IgG response, but the limited exposure to antigen means that it is unlikely to result in a clinical effect. Therefore, unless the clinician determines otherwise, reactions to cola nut rarely warrant strict avoidance of trace amounts.

BREWER'S YEAST IS BORDERLINE OR ELEVATED: Note that Brewer's Yeast and Baker's Yeast are different strains of one organism, Saccharomyces cerevisiae. The Brewer's Yeast strain is slower acting and has less after-taste than Baker's Yeast. Food sources of Brewer's Yeast include: beer, cider, dried fruits, marmite, miso, tamari, vegemite, yeast extract, wine. Brewer's Yeast may also be added to cookies, oatmeal and yogurt to improve nutrition. Brewer's Yeast is high in chromium and B vitamins and may be used in supplements.

BREWER'S YEAST IS BORDERLINE or ELEVATED AND BAKER'S YEAST IS NORMAL: Note that Brewer's yeast and Baker's yeast are different strains of the same Saccharomyces cerevisiae organism. The Brewer's yeast strain is selected for its ability to tolerate a more anaerobic (oxygen deprived) and high alcohol environment while the Baker's yeast form multiplies quickly and under high heat conditions. Despite the differences between the strains, and the fact that the patient reacted only to BREWER'S YEAST, the clinician may determine that avoidance of both strains is warranted depending on the clinical situation.

SEVERAL BIRCH POLLEN PROFILIN CONTAINING FOODS ARE ELEVATED: Profilins are small proteins in the plant cell cytoplasm that play a significant role in sensitizing individuals to pollens. Profilins are responsible for Oral Allergy Syndrome, a condition that results in burning or tingling in the mouth when cross-reactive foods are consumed. Different pollens are associated with specific foods. Foods that contain BIRCH POLLEN PROFILIN include: almond, apple, carrot, celery, cherry, hazelnut, kiwi, peach, peanut, pear, plum, potato, and soy. A reaction to several of these foods may indicate general reactivity to BIRCH POLLEN PROFILIN rather than reactivity to specific food antigens or families. Refer to the RMA Food Sensitivities and Cross-Reactions document for more information on cross-reactions.

SEVERAL LIPID TRANSFER PROTEIN CONTAINING FOODS ARE ELEVATED: Lipid transfer proteins (LTPs) are heat and acid stable, and therefore retain potential allergenicity after cooking or upon ingestion. Foods that have documented cross-reactivity via LTPs include: apple, celery, corn/maize, grape, hazelnut, kiwi, legumes, lettuce, peach, peanut, rice, soy, sunflower, and walnut. Refer to the RMA FST Food Sensitivities and Cross-Reactions document for more information on cross-reactions.

REACTIVITY TO CRUSTACEA AND/OR MOLLUSCA: Reaction to Crustacea and/or Mollusca (even in the absence of exposure to, or with strict avoidance of), may indicate cross-sensitivity to TROPOMYOSIN, an allergenic protein found in insects and arachnids. Dust mites and cockroaches are common tropomyosin-containing allergens. If the clinician determines that exposure to tropomyosin could be contributing to clinical symptoms, measures to reduce exposure to insect and arachnid antigens may be recommended. Refer to the RMA FST Food Sensitivities and Cross-Reactions document for more information on cross-reactions.

ELEVATED REACTIONS TO FOODS: Interpretation comments are provided for certain foods. Comments appear when related foods give seemingly inconsistent results (e.g. casein normal and cow's milk high) and for reactive foods that are not commonly found in the North American diet. Refer to the FST Patient Guide Book for commentary on sources of individual foods or food categories.

RMA FST™
IgG FOOD SENSITIVITY TEST

Provider:
Wellness Institute
Priyanka Gupta Naturopathic Doctor (ND)

Client:
Elizabeth Doan
DOB: 10-Jan-1977

ORDER BY REACTIVITY Report

ELEVATED FOODS

126	Milk (Cow)	106	Egg White	85	Barley
81	Milk (Sheep)	80	Pea	76	Peanut
69	Potato	65	Milk (Goat)	63	Soy Bean
58	Almond	45	Flax Seed	33	Malt
30	Couscous	30	Squash (Butternut/Carnival)		

BORDERLINE FOODS

95	Casein	48	Yeast (Brewer's)	43	Wheat
35	Agar Agar	34	Cola Nut	33	Corn
33	Pistachio	28	Cashew Nut	27	Brazil Nut
27	Durum Wheat	25	Snail (Sea Snail/Winkle)		

NORMAL FOODS

30	Gliadin	30	Hazelnut	29	Bean (White Haricot)
22	Clam	22	Egg Yolk	22	Ginkgo
22	Mustard Seed	22	Orange	21	Aloe Vera
20	Bean (Broad)	19	Radish	19	Squid
19	Yeast (Baker's)	18	Oat	18	Sea Bream (Red)
17	Cabbage (Savoy/White)	17	Cranberry	17	Mussel
17	Plum	17	Sunflower Seed	16	Oyster
15	Alga Espaguette	15	Mushroom	15	Raspberry
<15	Alga Wakame	<15	Alpha-Lactalbumin (whey)	<15	Amaranth
<15	Anchovy	<15	Aniseed	<15	Apple
<15	Apricot	<15	Artichoke	<15	Arugula
<15	Asparagus	<15	Avocado	<15	Banana
<15	Barnacle	<15	Basil	<15	Bass
<15	Bayleaf	<15	Bean (Green)	<15	Bean (Red Kidney)
<15	Beef	<15	Beet	<15	Bell Peppers
<15	Beta-Lactoglobulin (whey)	<15	Black Currant	<15	Blackberry
<15	Blueberry	<15	Broccoli	<15	Brussels Sprout
<15	Buckwheat	<15	Cabbage (Red)	<15	Camomile
<15	Cane Sugar	<15	Canola	<15	Caper
<15	Carob	<15	Carp	<15	Carrot
<15	Cauliflower	<15	Caviar	<15	Cayenne
<15	Celery	<15	Chard	<15	Cherry
<15	Chestnut	<15	Chicken	<15	Chickpea
<15	Chicory	<15	Cinnamon	<15	Clove
<15	Cockle	<15	Cocoa Bean	<15	Coconut

NORMAL FOODS

<15	Cod	<15	Coffee	<15	Coriander (Leaf)
<15	Crab	<15	Cucumber	<15	Cumin
<15	Curry (Mixed Spices)	<15	Cuttlefish	<15	Date
<15	Dill	<15	Duck	<15	Eel
<15	Eggplant	<15	Fennel (Leaf)	<15	Fig
<15	Garlic	<15	Ginger	<15	Ginseng
<15	Goat	<15	Grape (Black/Red/White)	<15	Grapefruit
<15	Guava	<15	Haddock	<15	Hake
<15	Herring	<15	Honey	<15	Hops
<15	Horse	<15	Kiwi	<15	Lamb
<15	Leek	<15	Lemon	<15	Lentil
<15	Lettuce	<15	Licorice	<15	Lime
<15	Lobster	<15	Lychee	<15	Macadamia Nut
<15	Mackerel	<15	Mango	<15	Marjoram
<15	Melon (Galia/Honeydew)	<15	Milk (Buffalo)	<15	Millet
<15	Mint	<15	Monkfish	<15	Mulberry
<15	Nectarine	<15	Nettle	<15	Nutmeg
<15	Octopus	<15	Olive	<15	Onion
<15	Ostrich	<15	Ox	<15	Papaya
<15	Parsley	<15	Partridge	<15	Peach
<15	Pear	<15	Peppercorn (Black/White)	<15	Peppermint
<15	Perch	<15	Pike	<15	Pine Nut
<15	Pineapple	<15	Plaice	<15	Polenta
<15	Pomegranate	<15	Pork	<15	Quail
<15	Quinoa	<15	Rabbit	<15	Raisin
<15	Razor Clam	<15	Red Chili Pepper	<15	Red Currant
<15	Rhubarb	<15	Rice	<15	Rosemary
<15	Rye	<15	Saffron	<15	Sage
<15	Salmon	<15	Sardine	<15	Scallop
<15	Sea Bream (Gilthead)	<15	Sesame Seed	<15	Shallot
<15	Shrimp/Prawn	<15	Sole	<15	Spelt
<15	Spinach	<15	Spirulina	<15	Squash, Summer
<15	Strawberry	<15	Sweet Potato	<15	Swordfish
<15	Tangerine	<15	Tapioca	<15	Tarragon
<15	Tea (Black)	<15	Tea (Green)	<15	Thyme
<15	Tiger Nut	<15	Tomato	<15	Transglutaminase
<15	Trout	<15	Tuna	<15	Turbot
<15	Turkey	<15	Turnip	<15	Vanilla
<15	Veal	<15	Venison	<15	Walnut
<15	Watercress	<15	Watermelon	<15	Wheat Bran
<15	Wild Boar	<15	Yuca		

Understanding the Reference Ranges

What Do the Numbers Mean?

The Majority of the foods tested in the RMA FST™ test fall within the following ranges:

Green : <15 to 23 U/mL
Yellow : 24 to 29 U/mL
Red : 30+ U/mL

However, there are 19 foods tested that have different reporting thresholds.

Why Are the Reporting Thresholds for Some Foods Different?

When we graph the ranked reactivities of most foods for a large population, we observe a fairly consistent curve (Figure 1). The inflection point of the curve, where reactivity increases markedly, tends to occur about the 75th percentile, which coincides with a result of 30. In other words, approximately 25 out of 100 people tested will have a result of 30 or higher.

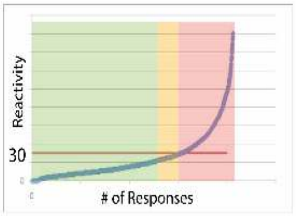

Figure1 Population Research Curve for Most Foods

Based on statistical analysis of a large body of patients tested at RMA, the reporting thresholds of some foods do not fit the pattern shown in Figure 1; instead, a result of 30 appears very "early" in the distribution. Therefore, the reporting thresholds for those foods are different in order to reserve a red result for those patients whose result for that food lies in the top quartile of the population (shown in Figure 2). These thresholds also allow the practitioner more leeway to interpret the findings in the context of his or her clinical experience. See the list of foods and their associated reference ranges below.

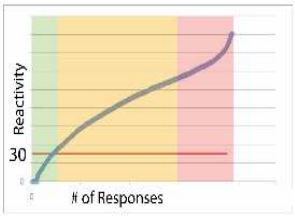

Figure 2 Population Research Curve for Different Foods

Foods with Different Reporting Thresholds

Updated Foods	Green Range	Yellow Range	Red Range
Agar Agar	<15 to 30	31 to 54	55+
Almond	<15 to 30	31 to 49	50+
Barley	<15 to 30	31 to 49	50+
Bean,Red Kidney	<15 to 30	31 to 47	48+
Bean,White Harricot	<15 to 30	31 to 44	45+
Casein	<15 to 30	31 to 97	98+

Updated Foods	Green Range	Yellow Range	Red Range
Cola Nut	<15 to 30	31 to 58	59+
Corn (Maize)	<15 to 30	31 to 46	47+
Egg White	<15 to 30	31 to 99	100+
Gliadin	<15 to 30	31 to 50	51+
Hazelnut	<15 to 30	31 to 37	38+
Milk (Cow)	<15 to 30	31 to 114	115+

Updated Foods	Green Range	Yellow Range	Red Range
Milk (Goat)	<15 to 30	31 to 64	65+
Milk (Sheep)	<15 to 30	31 to 66	67+
Pea	<15 to 30	31 to 66	67+
Peanut	<15 to 30	31 to 43	44+
Pistachio	<15 to 30	31 to 50	51+
Wheat	<15 to 30	31 to 66	67+
Yeast (Brewer's)	<15 to 30	31 to 58	59+

We'd like to know more about the patient experience with our tests and services. Please enter the link below into your browser to complete our short online survey. You could win a $50 gift card!

www.rmalab.com/FSTsurvey