



Food Allergy or Food Sensitivity?

On exposure to foods, the immune system can react by releasing proteins called antibodies. Foods that cause antibodies to be released are called antigens or allergens. Two types of antibodies are commonly produced in response to foods: IgE (immunoglobulin E) and IgG (immunoglobulin G). Food allergies and food sensitivities differ by the type of antibody produced and the speed of the reaction. Food allergy is an immediate reaction caused by the production of IgE antibodies, while food sensitivity is a delayed reaction caused by the production of IgG antibodies to specific foods.

Food Allergy IgE Reactions - Immediate

IgE reactions generally occur within minutes of eating a reactive food and can, on rare occasions, be life-threatening (e.g. peanut allergies). Skin eruptions (hives, eczema), breathing and digestive problems are also common IgE reactions. After first time exposure to an allergen, the body remembers what the allergen “looks like” and keeps a supply

of IgE ready for immediate release if it “sees” that allergen again. Referral to a specialist is recommended in the case of serious food allergies (i.e. difficulty breathing, anaphylaxis).

Food Sensitivity IgG Reactions - Delayed

IgG reactions take hours or days to develop, making it difficult to determine the food cause without testing. In an IgG reaction, the IgG antibodies attach themselves to the antigen and create an antibody-antigen complex. These complexes are normally removed by special cells called macrophages. However, if the complexes are present in large numbers and the food antigen is still being consumed, the macrophages are unable to remove all the complexes. The antigen-antibody complexes accumulate and can be deposited in body tissues. Once deposited in tissue, these complexes may cause inflammation, which can contribute to a variety of health conditions.

Delayed Food Reactions

Delayed food reactions are IgG antibody reactions (food sensitivities) that occur hours to days after a food is consumed. The inflammatory reaction triggered by antibody-antigen complexes may have the following effects:

Systemic

Fever, fatigue, chills, sweating and feeling weak, puffiness.

Skin

Itching, redness, swelling, and rashes.

Brain

Mood and memory disturbances, behavioural problems.

Lungs

Food-induced bronchitis and asthma symptoms.

Musculoskeletal

Joint pain, muscle stiffness and swelling.

Digestive tract

Nausea & vomiting, diarrhea, abdominal pain, gas, and bloating.

Conditions Associated with Food Sensitivities

Digestive disorders: Conditions like irritable bowel syndrome (IBS) and Crohn's disease have been linked to IgG food reactions. Research has shown that elimination of IgG reactive foods can alleviate IBS symptoms.

Migraines: A 2007 research study found that 43/65 patients with migraine headaches had complete remission of headaches after one month of eliminating reactive foods. Another study in 2010 found a significant reduction in the number of headache days and migraine attacks with elimination of reactive foods.

Mood/attention deficit disorders: Deposition of antibody-antigen complexes

in nervous system tissues may contribute to hyperactivity, depression, anxiety, inability to concentrate and other mood disorders. There is some evidence that eliminating IgG reactive foods can improve attentiveness in children.

Weight gain: Antibody-antigen complexes in tissue cause inflammation, which leads to fluid retention and weight gain. To fight inflammation, the body releases a chemical called ghrelin, which also happens to be an appetite stimulant. Thus, IgG food reactions may contribute to weight gain in two ways: fluid retention and increased appetite.

Why Test Food Sensitivities?

Because hours or days can pass between the time a reactive food is consumed and occurrence of symptoms, testing is often the only way to determine which foods are responsible for the reaction.

- IgG reactions frequently occur to commonly consumed foods such as dairy, wheat, eggs, yeast, pork and soy.
- Elimination diets (remove suspect foods for a period of time and then reintroduce and check for reactions) are difficult to follow and can take months to complete.

Information is for educational purposes only. It is not meant as medical advice and any treatment decisions should be made with the knowledge or consent of your healthcare professional

Food Reactions

Test Results

A sample RMA FST™ report appears at right. Foods with green boxes next to them are considered normal, or non-reactive, while foods with orange boxes are borderline, or close to being reactive. The red shaded box food results are considered reactive. Thus, it is easy to see at a glance which foods are problematic for you. The RMA FST™ also lists results by reactivity, so that all your reactive foods are grouped together. Knowing which foods you react to is an important first step to achieving better health. Your healthcare professional is best qualified to help you interpret the meaning of your results.

Eliminating Reactive Foods

Once you receive your results, your healthcare professional will help you formulate a plan to eliminate the problem foods from your diet. Most people see improvement of symptoms within a few weeks of eliminating the reactive foods. However, it is important to understand that symptom improvement may take some time, and results vary from individual to individual. Removing reactive foods from the diet can sometimes result in withdrawal symptoms like headaches, tiredness, irritability and hunger.

How “Leaky Gut” Contributes to Food Reactions

Leaky gut syndrome is caused by inflammation in the gut lining. Inflammation can be caused by food allergies or sensitivities, abnormal gut flora, stress, certain drugs, and alcohol. An inflamed gut lining causes more food particles to leak into the bloodstream where they may come in

contact with food-specific immunoglobulins. Therefore, a test report that shows multiple food reactions to foods regularly eaten may be an indication of leaky gut. If so, your healthcare professional may suggest treatments for your digestive system in addition to dietary changes.

Unexpected Results

- If you have not eaten a particular food for many months, you are less likely to have circulating antibodies to that food. In that case, a lack of reaction is most probably due to lack of exposure and does not necessarily mean the food is non-reactive.
- Sometimes reactions appear for foods seldom or never eaten. For example: a child reacting to coffee. This may be due to cross-sensitivity with a related food, or may result from inadvertent exposure to that food (hidden ingredient in packaged food item or sauce). Elevated IgG may also have a role in protecting against more serious IgE reactions. It's important to understand that having elevated IgG antibodies is not a concern if the reactive food is rarely eaten.
- Non-immune food reactions: Food reactions can also arise from a lack of digestive enzymes or stomach acid, chemicals naturally present in food and artificial additives. For example: lactose intolerance is due to lactase enzyme deficiency; histamine is found in wine, cheese, spinach and tomatoes; and MSG is an additive that can produce symptoms in some people. These are not immune reactions, and therefore will not result in antibody production.
- Food reactions can also arise from previous negative experiences with a specific food (e.g. food poisoning), in that physical reactions to subsequent exposures are possible.

RMA FST™
FOOD GROUP Report

REACTIVITY STATUS:
Green: Non-reactive
Orange: Borderline
Red: Reactive

NOTE: The foods assigned to individual antigens are based on a statistical analysis of a Canadian population. The upper and lower limits for assigning borderline status vary by antigen. The lower limit for assigning Red status varies by antigen.

Food Group	Reactive (Red)	Borderline (Orange)	Non-reactive (Green)
Dairy / Eggs	None	None	None
Grains	None	None	None
Grains (Gluten-Free)	None	None	None
Fruit	None	None	None
Vegetables	None	None	None

Why Test?

Good health has a lot to do with maintaining balance; the right balance of work and play, the right balance of nutrients in the diet, and the right kinds of foods.

Undiagnosed food sensitivities may contribute to symptoms and biochemical changes that result in illness.

Rocky Mountain Analytical is committed to offering tests that identify food reactions and other imbalances - so they can be corrected before disease develops!



TAKE THE GUESSWORK
OUT OF YOUR DIET



RMA FST™
IgG FOOD SENSITIVITY TEST

RMA FST™ Panel Options

RMA FST™ Enhanced

Over 220 Food Antigens

Cover all of your bases with our most comprehensive panel, the **RMA FST™ Enhanced**. It has all of the foods tested in the **RMA FST™ Basic** panel, plus over 80 more!

The **RMA FST™ Enhanced** panel includes some additional popular foods consumed in the North American diet, such as:

Blueberry	Flax Seed	Quinoa	Sweet Potato
Chamomile	Honey	Raisin	Tangerine
Chickpea	Mango	Rosemary	Watermelon
Couscous	Peppermint	Squash	...and many more!

RMA FST™ Vegetarian

Over 160 Food Antigens

Not worried about fish, seafood and meat? This panel is for you. The **RMA FST™ Vegetarian** panel has all of the vegetarian foods tested in the **RMA FST™ Enhanced** panel, including those listed under Dairy/Eggs.

*Excludes the foods listed in the Fish/Seafood and Meat categories, but includes over 50 vegetarian foods not provided in the **RMA FST™ Basic** panel.*

RMA FST™ Basic

Over 125 Food Antigens

Undiagnosed food sensitivities can affect quality of life. Take back control of your health with the **RMA FST™ Basic** panel, a personalized report of over 125 foods.

RMA FST™ Antigen List

(Continued on Second Side)

Category	RMA FST™ Basic			RMA FST™ Enhanced <i>Everything in the Basic panel, plus</i>	
Dairy/Eggs	Alpha-lactalbumin	Egg White	Milk (Goat)	Milk (Buffalo)	
	Beta-lactoglobulin	Egg Yolk	Milk (Sheep)		
	Casein	Milk (Cow)			
Grains	Barley	Oat	Wheat	Couscous	Spelt
	Durum Wheat	Rye	Wheat Bran		
	Gliadin				
Grains (Gluten-free)	Buckwheat	Millet		Amaranth	Tapioca
	Corn	Rice			
				Polenta	

Category		RMA FST™ Basic			RMA FST™ Enhanced <i>Everything in the Basic panel, plus</i>		
Fruit		Apple	Grape	Orange	Blueberry	Mango	Redcurrant
		Apricot	Grapefruit	Peach	Date	Mulberry	Rhubarb
		Avocado	Kiwi	Pear	Fig	Papaya	Tangerine
		Banana	Lemon	Pineapple	Guava	Pomegranate	Watermelon
		Blackberry	Lime	Plum	Lychee	Raisin	
		Blackcurrant	Melon (Honeydew)	Raspberry			
		Cherry	Nectarine	Strawberry			
		Cranberry	Olive				
Vegetables		Asparagus	Cauliflower	Onion	Artichoke	Quinoa	Sweet Potato
		Beet	Celery	Potato	Arugula	Radish	Turnip
		Bell Peppers	Chicory	Soy Bean	Cabbage (Red)	Shallot	Watercress
		Broccoli	Cucumber	Spinach	Chard	Squash (Butternut)	Yucca
		Brussel Sprout	Eggplant	Tomato	Fennel (Leaf)	Squash (Summer)	
		Cabbage (Savoy/ White)	Leek				
		Carrot	Lettuce				
Herbs/ Spices		Basil	Dill	Nutmeg	Aniseed	Ginkgo	Peppermint
		Chilli (Red)	Garlic	Parsley	Bayleaf	Ginseng	Rosemary
		Cinnamon	Ginger	Peppercorn (Black/White)	Camomile	Liquorice	Saffron
		Clove	Hops	Sage	Cayenne	Marjoram	Tarragon
		Coriander (Leaf)	Mint	Thyme	Curry	Nettle	
		Cumin	Mustard Seed	Vanilla			
Nuts/Seeds		Almond	Canola	Peanut	Bean (Broad)	Flax Seed	Pine Nut
		Bean (Green)	Coconut	Pistachio	Chickpea	Macadamia Nut	Tiger Nut
		Bean (Red Kidney)	Hazelnut	Sesame Seed			
		Bean (White Haricot)	Lentil	Sunflower Seed			
		Brazil Nut	Pea	Walnut			
		Cashew Nut					
Miscellaneous		Cane Sugar	Coffee	Tea (Green)	Agar Agar	Chestnut	Honey
		Carob	Mushroom	Yeast (Baker's)	Aloe Vera	Cola Nut	Transglutaminase
		Cocoa Bean	Tea (Black)	Yeast (Brewer's)	Caper		

Category		RMA FST™ Basic			RMA FST™ Enhanced <i>Everything in the Basic panel, plus</i>		
NOT INCLUDED in the RMA FST™ Vegetarian panel	Fish/ Seafood	Cod	Mussel	Sole	Anchovy	Cuttlefish	Sardine
		Crab	Oyster	Swordfish	Barnacle	Eel	Sea Bream (Gilthead)
		Haddock	Plaice	Trout	Bass	Espaguetto	Sea Bream (Red)
		Herring	Salmon	Tuna	Carp	Hake	Snail (Winkle)
		Lobster	Scallop	Turbot	Caviar	Monkfish	Spirulina
		Mackerel	Shrimp/Prawn		Clam	Octopus	Squid
					Clam (Razor)	Perch	Wakame
					Cockle	Pike	
	Meat	Beef	Lamb	Veal	Goat	Ox	Rabbit
		Chicken	Pork	Venison	Horse	Partridge	Wild Boar
		Duck	Turkey		Ostrich	Quail	

* Rocky Mountain Analytical reserves the right to substitute/change allergens without notice.

Which RMA FST™ Panel Is Right for You?

There are three panel options available to meet your needs:

RMA FST™ Basic

Over 125 foods

RMA FST™ Vegetarian

Over 160 foods

RMA FST™ Enhanced

Over 220 foods

You want to choose a panel that best reflects you and your eating habits, and is the best value for money. Don't eat meat, fish or seafood? Try the Vegetarian panel. Mainly interested in your reactivity to the most common food sensitivities? Perhaps the Basic panel will do. Wondering if you should select the Enhanced panel? To make a confident choice, it is important to consider all of the foods that you consume on a regular basis.

When to Select RMA FST™ Enhanced

Below is a list of foods included in the **RMA FST™ Enhanced** panel *only*. If your diet includes **four* or more foods**, the **RMA FST™ Enhanced** panel is the best option of you.

Note: This is a condensed list. See the **Antigen List** for the full list of foods.

Fruit

- ☐ Blueberry
- ☐ Mango
- ☐ Pomegranate
- ☐ Raisin
- ☐ Tangerine
- ☐ Watermelon
- ☐ Date
- ☐ Fig
- ☐ Papaya

Vegetables

- ☐ Sweet Potato
- ☐ Shallot
- ☐ Arugula
- ☐ Zucchini (also known as Summer Squash)
- ☐ Butternut Squash
- ☐ Red Cabbage
- ☐ Radish
- ☐ Chard

Nuts/Seeds

- ☐ Flax Seed
- ☐ Chickpea (commonly used in hummus and falafel)
- ☐ Macadamia Nut
- ☐ Fava Bean (also known as Broad Bean)

Fish/Seafood

- ☐ Anchovy (commonly found in caesar dressing)
- ☐ Squid (used for calamari)
- ☐ Wakame (commonly used in miso soup)
- ☐ Spirulina

Grains

- ☐ Quinoa
- ☐ Couscous
- ☐ Beer or Whiskey (often has Malt)
- ☐ Spelt or Amaranth (flours commonly used to replace wheat)
- ☐ Gluten-Free Breads (often has Tapioca)

Meat

- ☐ Goat
- ☐ Rabbit
- ☐ Ox

Herbs/Spices

- ☐ Herbal teas: Peppermint or Camomile (also spelled Chamomile)
- ☐ Rosemary
- ☐ Ginseng
- ☐ Cayenne
- ☐ Curry
- ☐ Ginkgo

Miscellaneous

- ☐ Honey
- ☐ Jams, Jellies or Canned Soup (often has Agar Agar)
- ☐ Deli Meats or Chicken Nuggets (often has Transglutaminase)

* Each of these antigens are available to order by your Healthcare Provider through Rocky Mountain Analytical, as an add-on to the Basic and Vegetarian panels. They are a minimum of \$25 each.

Learn more at: rmlab.com/RMAFST

Food Reintroduction - Symptoms Tracker

- Remove the foods that are reactive, following your Healthcare Provider's guidance and advice.
- Track your symptoms, and if they have improved, you may want to test yourself for reactions by slowly reintroducing foods into your diet. Consult with your Healthcare Provider before doing this.
- Choose one test food to reintroduce into your diet at a time.
- Using the tracker below, take detailed notes on how you feel, and make a point to notice everything you're feeling.

	Day 1	Day 2	Day 3	Day 4	Day 5
Time					
Food					
Digestion/Bowel Function					
Joint/Muscle Aches					
Headache/Pressure					
Nasal or Chest Congestion					
Kidney/Bladder Function					
Skin					
Energy Level					
Sleep					
Other Symptoms					

RMA FST Basic

Accession: 111111

Healthcare Professional
Dr. John Smith
1234 Imagination Road
Calgary, AB T3G 1X1

Patient
Sally Thomson

Age: 31
Date of Birth: 1985/12/20
Gender: Female

P: 403-555-1234
F:



RESULT STATUS

NORMAL

NOTE: The limits assigned to individual antigens are based on a statistical analysis of a Canadian population

The upper limit for assigning **Normal** status varies by antigen.

BORDERLINE

The upper and lower limits for assigning **Borderline** status vary by antigen.

ELEVATED

The lower limit for assigning **Elevated** status varies by antigen.

Dairy / Egg

0	Alpha-Lactalbumin (whey)	0	Beta-Lactoglobulin (whey)	67	Casein
72	Egg White	8	Egg Yolk	91	Milk (Cow)
32	Milk (Goat)	31	Milk (Sheep)		

Grains

47	Barley	29	Durum Wheat	87	Gladiin
9	Oat	25	Rye	54	Wheat
22	Wheat Bran				

Grains (Gluten-Free)

1	Buckwheat	48	Corn	0	Millet
50	Rice				

Fruit

3	Apple	1	Apricot	3	Avocado
4	Banana	6	Black Currant	8	Blackberry
7	Cherry	9	Cranberry	5	Grape (Black/Red/White)
6	Grapefruit	3	Kiwi	3	Lemon
15	Lime	4	Melon (Galia/Honeydew)	1	Nectarine
3	Olive	14	Orange	3	Peach
5	Pear	2	Pineapple	25	Plum
10	Raspberry	4	Strawberry		

Vegetables

0	Asparagus	1	Beet	5	Bell Peppers
7	Broccoli	7	Brussels Sprout	23	Cabbage (Savoy/White)

Vegetables

15	Carrot	1	Cauliflower	11	Celery
2	Chicory	7	Cucumber	1	Eggplant
2	Leek	2	Lettuce	4	Onion
42	Potato	3	Spinach	1	Tomato

Fish / Seafood

5	Cod	3	Crab	10	Haddock
5	Herring	3	Lobster	2	Mackerel
22	Mussel	53	Oyster	4	Plaice
1	Salmon	22	Scallop	3	Shrimp/Prawn
4	Sole	0	Swordfish	1	Trout
8	Tuna	0	Turbot		

Meat

3	Beef	2	Chicken	0	Duck
3	Lamb	3	Pork	0	Turkey
4	Veal	3	Venison		

Herbs / Spices

3	Basil	2	Cinnamon	0	Clove
0	Coriander (Leaf)	0	Cumin	2	Dill
4	Garlic	7	Ginger	5	Hops
1	Mint	16	Mustard Seed	11	Nutmeg
0	Parsley	0	Peppercorn (Black/White)	6	Red Chili Pepper
1	Sage	0	Thyme	0	Vanilla

Nuts / Seeds / Legumes

38	Almond	1	Bean (Green)	25	Bean (Red Kidney)
9	Bean (White Haricot)	16	Brazil Nut	0	Canola
16	Cashew Nut	1	Coconut	21	Hazelnut
5	Lentil	40	Pea	22	Peanut
33	Pistachio	0	Sesame Seed	4	Soy Bean
14	Sunflower Seed	8	Walnut		

Miscellaneous

5	Cane Sugar	3	Carob	3	Cocoa Bean
3	Coffee	2	Mushroom	2	Tea (Black)
0	Tea (Green)	59	Yeast (Baker's)	58	Yeast (Brewer's)

Candida IgG

Status:

Negative



George Gillson MD, PhD
Medical Director

Note: The College of Physicians and Surgeons of Alberta considers some forms of testing for food reactions to be complementary medicine. Specific IgG quantification has been utilized in research settings to assess and investigate Type I and Type III allergies respectively. However, the assessment of human IgG antibodies specific for individual food antigens is not a recognized diagnostic indicator of allergy. Rocky Mountain Analytical does not diagnose or make treatment recommendations. Data is provided for research and educational purposes only.

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, aleurone 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.

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.

BAKER'S YEAST IS ELEVATED: Note that Baker's yeast and Brewer's yeast are different strains of one organism, *Saccharomyces cerevisiae*. Baker's yeast must multiply quickly and under high heat, and so the appropriate strain of *Saccharomyces cerevisiae* is selected for rapid growth and ability to tolerate high heat. Food sources of baker's yeast include: bagels, bread, buttermilk, cheese, MSG, Oxo cubes, pizza dough, pretzels, root beer, soy sauce, soup, sourdough.

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 RMA Food Reaction Guide for commentary on sources of individual foods or food categories.

TAKE THE GUESSWORK
OUT OF YOUR DIET

PATIENT GUIDEBOOK



RMA FSTTM
IgG FOOD SENSITIVITY TEST


Rocky Mountain Analytical[®]
Changing lives, one test at a time

Guidebook Contents

The Guidebook helps you to interpret the results obtained from your RMA food sensitivity test (**RMA FST™**) and how to plan for a change of diet. This information is intended to help identify which foods should be eliminated, reduced or rotated and provide ideas for alternative/substitute foods. Understanding how to re-introduce foods once symptoms have subsided helps you adopt a varied and balanced diet, which is essential to maintain good health. Ideas contained in the Guidebook also assist with developing an achievable, sustainable and enjoyable dietary regimen.

NOTE: The information in this guidebook is for educational purposes only. It is not meant as medical advice and any treatment decisions should be made with the knowledge or consent of your healthcare professional.

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Understanding Food Sensitivity

TERMINOLOGY

The terms *food allergy*, *food intolerance*, and *food sensitivity* all refer to abnormal reactions to foods, and the terms are often used interchangeably. However, food reactions fall into one of two categories: those that involve activation of the immune system (IgE or IgG antibodies produced) or; non-immune mediated reactions such as lactose intolerance.

IMMUNE-MEDIATED REACTIONS

Reactions that trigger an immune response are often called *allergies* and occur when the body over-reacts to foods. This over-reaction, or hypersensitivity, triggers the immune system to produce antibodies to attack the 'foreign' food proteins which the immune system recognizes as a threat.

Hypersensitivities are grouped into four types: I, II, III and IV. These classifications are based on which part of the immune system is activated and how long it takes for a reaction to occur. The two types of hypersensitivities that are most often associated with adverse reactions to food are:

Type I Hypersensitivity

IgE-mediated allergy / food allergy / immediate hypersensitivity

These reactions are characterized by the production of IgE antibodies and the release of histamine and other chemical mediators upon exposure to an allergen (e.g. peanuts and shellfish). They are responsible for the 'immediate-onset' of symptoms that can occur within seconds or minutes following ingestion of certain foods. Symptoms often associated with classic IgE allergies include: rashes, sneezing, difficulty breathing and anaphylactic shock. It is often readily apparent which foods are responsible for a food allergy, and these foods must be avoided for life.

Type III Hypersensitivity

IgG-mediated allergy / food sensitivity / delayed hypersensitivity

These reactions are characterized by the production of IgG antibodies and the gradual formation of antigen-antibody complexes which deposit in tissues and can lead to chronic inflammation. They are responsible for the 'delayed-onset' of symptoms, which can occur several hours or days after foods are ingested. Symptoms may include: irritable bowel syndrome (IBS), headaches/migraines, fatigue, high blood pressure, eczema, asthma, joint pain, runny nose, arthritis, weight problems and fibromyalgia. It is often possible to eliminate reactive food(s) from the diet for several months and gradually re-introduce when symptoms have improved.

INTOLERANCE OR SENSITIVITY?

IgG food reactions are sometimes referred to as food intolerances. However, because IgG food reactions are immune-mediated Type III hypersensitivity reactions, the term *food sensitivity* is generally considered more applicable. Consequently, the term food sensitivity is used to refer to IgG reactions to foods throughout this Guidebook.

Understanding Food Intolerance

NON IMMUNE-MEDIATED REACTIONS

Reactions that do not produce an immune response are typically referred to as food intolerances, (although this term is occasionally used to describe IgG food reactions). Food intolerance is usually caused by reactions to chemicals or additives found in food, or more commonly due to enzyme deficiencies:

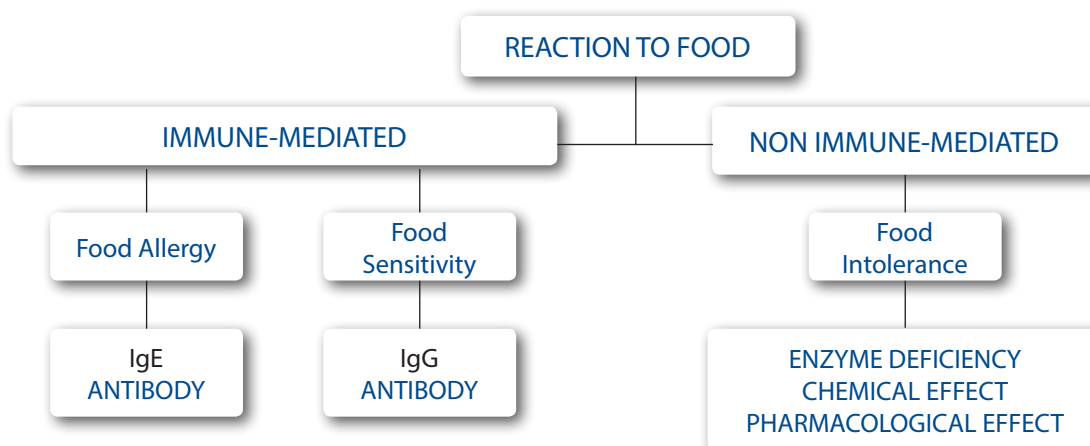
Enzyme Insufficiency/Deficiency

Lactose Intolerance

- Caused by a deficiency of lactase, an enzyme that breaks down lactose (a complex sugar).
- Foods that contain lactose include: dairy products (milk, cheese, yogurts, etc).
- Symptoms include: bloating, diarrhea and flatulence.

Histamine Intolerance

- Caused by elevated histamine levels due to a deficiency or inhibition of diamine oxidase (DAO), an enzyme that breaks down histamine (a chemical that triggers an inflammatory response).
- Aggravated by foods high in histamine, including: red wine, cheese and tuna fish.
- Some foods are low in histamine, but can trigger the release of histamine in the body, including: citrus foods, bananas, tomatoes and chocolate.
- Symptoms may include: migraines, dizziness, bowel/stomach problems, runny nose, or irritation and reddening of the skin.



Interpreting Your Test Results

TEST REPORT

The **RMA FST™** test report lists the foods your blood sample has been tested for. The number of foods reported depends on which **RMA FST™** panel was selected. Every **RMA FST™** reports results in two different formats:

1. Food Group format - foods listed alphabetically within their respective food group.
2. Order of Reactivity format - foods listed according to strength of antibody reaction.

ANTIBODY LEVELS

A numerical value is displayed in a coloured box adjacent to each food and represents the concentration of IgG antibodies detected (in U/ml) for each food. The higher the value assigned, the stronger your body's immune response to that particular food. Depending upon the antibody level detected, foods are categorized as: **ELEVATED**, **BORDERLINE** or **NORMAL**. Colour-coding of these categories allows reactive foods to be easily identified and avoided.

ELEVATED	BORDERLINE	NORMAL
Indicates that a high antibody reaction was detected	Indicates that a moderate antibody reaction was detected	Indicates that no significant reaction was detected
<p>These are the reactive foods, which should be eliminated from your diet for at least 3 months.</p> <p>Substitute with NORMAL (green) foods from the same food group. Please refer to 'Test Report: Food Groups'.</p>	<p>These are moderately reactive foods, which should be reduced and rotated for at least 3 months to avoid increased sensitivities.</p> <p>Substitute with NORMAL (green) foods from the same food group. Please refer to 'Test Report: Food Groups'.</p>	<p>These foods can be eaten without restriction, unless they have previously caused an adverse reaction.</p> <p>If you have a known <u>allergy</u> to a specific food that triggers a rapid-onset of symptoms (Type I allergy), this food should be avoided.</p>

If you are experiencing adverse symptoms and the **RMA FST™** test has identified **ELEVATED** or **BORDERLINE** IgG antibody levels, this may indicate a sensitivity to those specific foods. Removing them from the diet usually results in an improvement of symptoms. Please refer to 'Planning Your Diet' for more detailed information about removal/substitution of foods.



Important Points

- If the **RMA FST™** IgG food sensitivity test did not identify any **ELEVATED** foods, but you are experiencing symptoms associated with food sensitivity, your healthcare professional may recommend you avoid **BORDERLINE** foods for 3 months or more.
- It can be difficult to eliminate multiple **ELEVATED** foods at the same time. You may find it easier to:
 - a) Completely avoid the top 4 or 5 foods showing the highest antibody concentrations.
 - b) Reduce and/or rotate the remaining foods showing moderate antibody concentrations.
 Please refer to 'Test Report: Order of Reactivity' for antibody concentrations.
- It is normal to feel worse for a few days after eliminating specific foods and changing your diet. Your body needs time to overcome the withdrawal symptoms it is experiencing, so be prepared to persevere. Improvements may only become apparent after a few weeks.
- To rotate foods, eat them no more than once every 4 to 5 days. For example, to rotate wheat, eat wheat bread on day 1; oat cakes on day 2; corn cakes on day 3; rye crispbread on day 4 and durum wheat pasta on day 5, etc.
- If **ELEVATED** foods are to be eliminated from the diet (e.g. milk), it is essential that nutrients found in this food group (e.g. calcium) should be sourced from other foods.
- Do not eliminate foods and then substitute them solely with other foods from the same food group, as this may result in other food sensitivities. For example, if wheat is regularly consumed for breakfast (e.g. toast) and then eliminated from the diet, do not replace wheat with oatmeal porridge every day. It is advisable to eat and rotate a wide variety of foods from the same food group.
- Many people experience the greatest improvement when they completely eliminate highly reactive foods. However, if you choose not to eliminate, or inadvertently consume a highly reactive food, resume your food plan as soon as it is convenient.
- If a food has not been consumed within the last 3 months, the **RMA FST™** is more likely to report a **NORMAL** reaction because lack of exposure keeps IgG antibody levels low for that food.
- If symptoms have not improved after 2 to 3 months despite eliminating the **ELEVATED** foods identified in the **RMA FST™** test, this could indicate that IgG-mediated food sensitivity is not the cause of your symptoms. Your healthcare professional can help determine what your next steps should be.
- Gliadin is a protein fraction of gluten and is found in the grains of wheat, barley, and rye. Gliadin is tested separately to these grains to help identify the potential source of reactivity. If your test shows an **ELEVATED** response to gliadin, it is advisable to avoid any foods containing wheat, barley or rye, even if these grains are listed as **NORMAL** in your Test Report.



Planning Your Diet

BEFORE MAKING ANY CHANGES

Nutrition and health go hand-in-hand and there are some simple rules that should be followed before changing your diet:

- If you have a medical condition, are pregnant or on medication, you must discuss any dietary changes with your healthcare professional.
- Be aware of the range of foods that can be eaten. Although some foods may have been identified as having high IgG antibody levels, there will be many foods in the same food group that can be eaten freely without causing any adverse symptoms. Rather than focusing on the foods that cannot be eaten, it is more positive to focus on all the delicious foods in the **NORMAL** range that can be consumed.
- Investigate which products contain foods that you are reactive to. Many ready-made meals and sauces contain ingredients that are not obviously associated with those products, so it is important to always check the labels before purchase.
- Vary foods as much as possible. Choose a variety of different coloured fruit and vegetables daily; include different proteins such as scrambled egg for breakfast, tuna salad for lunch and chicken for the evening meal. Eating a variety of foods increases the range of important vitamins and minerals in your diet and decreases the risk of developing a sensitivity to any single food.

PLANNING AHEAD

It is advisable to take a day or two to prepare yourself before starting a new diet. This Guidebook provides you with much of the information you need to benefit from your **RMA FST™** test. We recommend that you plan daily menus well in advance, incorporating as many **NORMAL** foods as possible. By collecting recipe ideas and shopping ahead of time, you are less likely to struggle with adopting and maintaining a new diet.

ELIMINATING OR ROTATING FOODS

Any foods listed as **ELEVATED** or **BORDERLINE** should ideally be eliminated or rotated for at least 3 months. Most foods are relatively straightforward to eliminate from the diet and can be replaced with **NORMAL** foods from the same food group. These can be found in 'Test Report: Food Groups'.

However, foods such as wheat, gluten, dairy, eggs, soy and yeast are more difficult to eliminate from the diet completely, as they are widely used in everyday foods. To help you plan your diet more effectively, further information for each of these foods is provided in this Guidebook, pages 8 to 14.



Monitoring Your Symptoms



FOOD/SYMPTOM DIARY

It is often useful to keep a food/symptom diary to monitor your progress. Record the foods that are consumed before any dietary changes are made and then continue as new foods are introduced. Record how you feel and note any changes in symptoms (i.e. better or worse), as this will help to identify any patterns emerging with respect to certain foods.

RE-INTRODUCING FOODS

If, after at least 3 months, symptoms have subsided and your healthcare professional has recommended you do so, you may gradually re-introduce **ELEVATED** foods to your diet. Introduce one food at a time and monitor your symptoms over a 5 day period. If symptoms return, this food may still be a problem and should be avoided for another month or two. If symptoms do not return, this food can be included in your diet, but should only be eaten occasionally. You can then introduce another reactive food, monitor symptoms for 5 days, and so on.

HINTS AND TIPS

- Be patient when introducing foods back into your diet.
- Do not over-indulge! By enjoying your favourite foods occasionally, you may prevent sensitivities from re-occurring.
- Initially re-introduce reactive foods with lower antibody levels - refer to "Test Report: Order of Reactivity".
- Wait 5 days to observe whether symptoms develop before introducing the next food.
- Continue to introduce increasingly reactive foods, one at a time, leaving 5 days between each new food.

AVOIDING NEW FOOD SENSITIVITIES

After reactive foods are eliminated from the diet and additional foods are introduced, it is possible that sensitivities to these additional new foods may develop. This usually occurs when a reactive food is swapped almost exclusively for a different food. For example, if wheat has been regularly consumed for breakfast (e.g. toast) and is then eliminated from the diet, breakfasts should be varied going forward. For example: alternate porridge with fruit salad and yogurt or poached eggs on rye bread.

In summary, to prevent new food sensitivities from developing:

- Avoid eating any one food too regularly.
- Consume previously reactive foods only once every few days.
- Include a wide variety of foods in the diet to ensure that a range of important vitamins and minerals are consumed.
- Occasionally, a reactive food may need to be omitted from the diet indefinitely. Your healthcare professional can advise you on whether a particular food ought to be taken out of your diet permanently.

How To Avoid Dairy



If the **RMA FST™** shows an **ELEVATED** reaction to milk, your healthcare professional may recommend you eliminate all milk and milk products from your diet.

Milk is an important source of protein, calcium and vitamins including A, D and B complex, so it is important to obtain these nutrients from alternative food sources.

FOODS TO AVOID	INGREDIENTS TO AVOID	ALTERNATIVE FOODS
<p>Dairy products can be found in many foods:</p> <ul style="list-style-type: none"> • Milk, milkshakes • Yogurt, cream cheese • Cream, ice cream • Cheese • Butter, spreads • Custards • Puddings • Sauces • Gravy • Creamed soup • Cakes, scones, doughnuts • Waffles, pancakes • Biscuits • Bread, pizza • Instant mashed potatoes • Ready meals • Processed meats, sausages • Chocolate, candy 	<p>Dairy may be hidden in many foods and so it is important to always read the food ingredient labels carefully before purchase.</p> <p>Ingredients to avoid:</p> <ul style="list-style-type: none"> • Butter, ghee • Casein, caseinate • Cream, light cream • Demineralized whey • Beta-lactoglobulin • Alpha-lactalbumin • Non-fat milk • Milk powder, skimmed milk powder • Milk solids, non-fat milk solids • Whey, sweet whey powder 	<p>Dairy-free foods are available:</p> <p>Milk - Oat milk, rice milk, soy milk, quinoa milk, pea milk, coconut milk, nut milks such as almond or cashew (if no risk of allergic reaction). Some people can tolerate other animal milks, however sheep, goat and buffalo milk contain similar proteins to cow's milk, and can cause similar reactions, therefore these milks should be consumed cautiously.</p> <p>Butter – dairy-free and vegan spreads, nut spreads, tahini, avocado oil, cold pressed olive oil or coconut oil</p> <p>Cheese - hard and soft varieties of soy cheese; rice slices</p> <p>Yogurts – soy</p> <p>Ice-creams – soy, coconut or rice. Sorbet</p> <p>Cream – soy, cashew or almond</p> <p>Cream cheese – soft tofu</p> <p>Chocolate – dairy-free chocolate</p> <p>Mayonnaise – dairy-free mayonnaise</p>

PROTEIN, CALCIUM AND VITAMINS

To ensure a rich source of protein, calcium and vitamins (A, D and B complex), consume a variety of foods such as soy, cod liver oil, vegetable oil, sardines, salmon, nuts, red meat, fresh fruit, vegetables (especially green leafy vegetables such as spring greens, watercress, spinach and broccoli), rhubarb, figs, mushrooms, oranges, apricots, prunes, pumpkin seeds, sesame seeds, lentils and legumes. Note: calcium is water soluble – ideally steam or boil vegetables in a little water, which can be then be used in soups, gravy and sauces.

How To Avoid Eggs

If the **RMA FST[™]** test shows an **ELEVATED** reaction to egg white and/or egg yolk, your healthcare professional may recommend you eliminate eggs and products containing egg proteins from your diet.

However, eggs are an excellent source of protein and provide significant amounts of calcium, iron, zinc and B-vitamins. Alternative foods that provide an equivalent nutritional value should be consumed.



FOODS TO AVOID	INGREDIENTS TO AVOID	ALTERNATIVE FOODS
<p>Eggs can be found in many foods:</p> <ul style="list-style-type: none"> • Omelettes, quiches • Cakes, biscuits, meringues, ice-cream, custard • Pancakes, crepes, cheesecakes, pavlova, crème caramel, puddings • Pasta, noodles • Chinese rice and soups, some sushi • Battered or breadcrumb-coated foods • Mayonnaise, tartar sauce, horseradish sauce, lemon curd, salad dressings • Hash browns, some potato products, ready meals • Fresh bakery goods may not be labelled so check the ingredients with the bakers • Soups 	<p>Eggs are hidden in many foods, so it is important to always read the ingredients label carefully before purchase.</p> <p>Below is a checklist of the main product ingredients that are derived from eggs:</p> <ul style="list-style-type: none"> • Albumin • Egg white • Egg yolk • Frozen egg • Pasteurised egg • Dried egg • Egg powder • Egg protein • Ovalbumin • Ovovitellin • Ovaglobulin • Ovamucin • Globulin • Livetin • Vitellin 	<p>Egg-free foods are available:</p> <ul style="list-style-type: none"> • Pasta made from corn, rice, quinoa or buckwheat (soba) • Rice or buckwheat noodles • Boiled or fried rice (e.g. brown basmati rice) • Clear soup or broth • Egg-free mayonnaise • Egg-free snacks (e.g. potato chips, rice cakes, corn thins and rye crispbreads) • Fresh fruit, stewed fruit or fruit crumble • Sorbet or soy ice-cream • Home-made cakes (using egg replacer, apple sauce, banana, silken tofu, buttermilk or yogurt)

How To Avoid Wheat



If the **RMA FST™** test shows an **ELEVATED** reaction to wheat, your healthcare professional may recommend that you eliminate all wheat and wheat products from your diet for at least 3 months.

Wheat is an important source of fibre, vitamins and minerals, particularly vitamin B complex, chromium and zinc. If wheat is to be eliminated from the diet, it is important that these nutrients are obtained from alternative sources.

FOODS TO AVOID	INGREDIENTS TO AVOID
<p>Wheat can be found in many foods:</p> <ul style="list-style-type: none"> • Breads, rolls, crackers, scones, pancakes, wafers, cakes, biscuits, chapatis, naan breads • Breakfast cereals • Pizza, pasta, pies and pastries • Ice-cream, powdered drinks, malted drinks, chocolate bars, liquorices and puddings • Beer, stout, lager and most spirits • Wheat is also found in many convenience foods such as: <p>Soups, sauces, spices, processed meats, ready-made meals (including burgers), oven chips, salami, sausages, meat or fish coated in breadcrumbs, corned beef, pâté and spreads, potato chips, commercial sauces, salad dressings, ham, gravy, stock cubes, herbs, spices, baking powder, canned foods (including beans), and spaghetti.</p>	<p>Wheat is hidden in many foods, so it is important to read the ingredients label carefully before purchase.</p> <p>Below are some ingredients that may be listed:</p> <ul style="list-style-type: none"> • Binder or brown flour • Breadcrumbs • Bulgar wheat, triticale, kamut, spelt, or cracked wheat • Couscous, wheat bran, durum wheat or semolina • Gum base • Hydrolyzed wheat protein or wheat gluten • Wheat starch, modified starch, food starch, wheat flakes or edible starch • Whole wheat or puffed wheat • Wheat germ flour or unbleached flour • Wheat germ oil or wheat germ extract • Wholegrain or wholemeal flour

How To Avoid **Wheat**

ALTERNATIVE FOODS

Although wheat is a significant source of nutrients, other food products can provide equivalent vitamins and minerals. Eliminating wheat may be challenging, but alternative foods should be eaten to ensure that an enjoyable, varied and healthy diet is adopted:

- Breads – wheat-free bread is now widely available and generally made from rice flour, rye flour or blended from potatoes and corn. These types of bread contain the essential B vitamins, iron and folic acid that are found in wheat bread. Choose from 100% rye bread, pumpernickel or rye/barley soda bread. Crackers or crispbreads such as rye crispbreads, oatcakes, corn cakes and rice cakes can be used in place of bread for meals and snacks.
- Pasta – choose pasta made from rice, quinoa, corn or buckwheat, which also contain B vitamins. Noodles are also available in buckwheat or rice.
- Biscuits – a wide range of biscuits are available that are made from maize or oats, and can be either sweet or savoury.
- Breakfast cereals – a wide selection of cereals are available that do not contain wheat, such as cornflakes, wheat-free muesli, porridge oats, millet puffs, brown rice puffs, puffed buckwheat, and quinoa flakes. These all provide a good source of B vitamins and iron.
- Batter and breadcrumbs (made from wheat flour) - use wheat-free bread or corn flakes to make bread crumbs instead.
- Sausages – usually contain wheat. Some gluten-free alternatives available in supermarkets, butchers shops and meat producers at farmers markets.
- Japanese, Chinese and Thai dishes (containing soy sauce) - soy sauce is produced using wheat. At home, try Japanese Tamari soy sauce which is made without wheat.
- Gravy – use vegetable stock or wheat-free stock tablets and thicken with corn starch. If a brown gravy is preferred, add gravy browning. Wheat/gluten-free instant gravy powders are also available.
- Sauces – to make a white sauce use corn starch or another wheat-free flour (e.g. rice, potato or chickpea flour) to thicken the sauce. To prevent lumps forming, mix the corn starch first with a little cold milk. Heat the remaining milk in a pan and then add a small amount of the hot milk to the cold mix and stir. Add the remaining milk to the pan, cook through and then add the flavouring (e.g. grated cheese or parsley).
- Baking – There are many foods that can be used as a substitute to wheat that provide variety to meals and essential nutrients. Ingredients that can be used in many recipes instead of wheat include:
 Bicarbonate of soda, cream of tartar, tapioca, gelatin based desserts, pure spices, rice and arrowroot; amaranth; potato flour; barley (flakes or flour); quinoa; buckwheat (flakes or flour); rice grains (flakes or flour); corn (corn starch, polenta); rye; ground nuts (e.g. almonds); teff; sorghum; lentils; pea, bean, chickpea flours; soy (flakes or flour); millet grains (flakes or flour); tapioca and oats.
- Wheat-free manufactured products – a wide variety of wheat-free speciality products such as flour, bread, biscuits, cakes and gravy mixes are now available at supermarkets and on-line. Some cafés or restaurants sell home baked gluten-free cakes - check that they are also wheat-free.

Please note that products labelled gluten-free may not be wheat-free as some are made from wheat starch and these are not suitable for wheat-free diets. REMEMBER: always check the label.

How To Avoid Gluten

If the **RMA FST™** test shows an **ELEVATED** reaction to gliadin (a protein fraction of gluten), it is important to eliminate gluten-based grains from your diet, even if the individual grains (wheat, barley and rye) are not **ELEVATED** on your Test Report. The gliadin and gluten-containing grain results need to be interpreted together.



Some people with gluten sensitivity can tolerate oats, but because oats are often contaminated with wheat, rye and/or barley, avoidance of oats is also often recommended.

FOODS TO AVOID	INGREDIENTS TO AVOID	ALTERNATIVE FOODS
<p>Foods containing wheat: Refer to 'How To Avoid Wheat'</p> <p>Foods containing rye:</p> <ul style="list-style-type: none"> • Crispbreads • Crackers • Pumpernickel bread • Rye bread • Some types of whisky • Some types of beer <p>Foods containing barley:</p> <ul style="list-style-type: none"> • Barley water • Pot barley • Pearl barley • Some soups and stews • Coffee substitutes • Some types of whisky • Some types of beer 	<p>Gluten may be hidden in many foods and so it is important to always read the ingredients label carefully before purchase.</p> <p>Below are some ingredients that may be listed:</p> <ul style="list-style-type: none"> • Wheat • Rye • Barley • Spelt • Durum wheat • Couscous • Kamut • Malt • Bran • Triticale • Dextrin • Oats 	<p>Alternative ingredients that can be used in gluten-free baking include:</p> <ul style="list-style-type: none"> • Amaranth • Arrowroot • Potato flour • Quinoa flour • Buckwheat flour • Rice flour • Corn flour • Ground nuts (e.g. almonds) • Lentil flour • Chickpea flour • Soy flour • Millet flour • Tapioca

Please refer to "How To Avoid Wheat" for further information.

How To Avoid Yeast



If the **RMA FST™** test shows an **ELEVATED** reaction to Baker's or Brewer's yeast, your healthcare professional may recommend you eliminate all yeast and yeast-containing products from your diet. This may include related foods such as mushrooms, moldy cheeses (e.g. blue cheese) and other forms of fungi in foods and in the environment.

Note: Bakers and Brewer's yeast are 2 strains of the same organism and it is likely that if you react to one strain, you will also react to the other.

Of all the foods to avoid, yeast is one of the most difficult as it is hidden in so many processed foods. It is important to plan ahead before starting a yeast-free diet.

Live yeast is used in food preparation and processing, where it converts sugar into carbon dioxide and alcohol. It is a good source of B vitamins, which can be also obtained in meat, fish, whole grains, nuts and dark green leafy vegetables. Yeast-free diets need to avoid natural sources of yeast, as well as those added to food, so adopting a low sugar diet may also provide benefits by preventing the growth of yeast cells within the digestive system.

FOODS TO AVOID

- Baker's yeast, Brewer's yeast.
- Breads, pizza bases, pastries (e.g. croissants) and other bread-type cakes raised with yeast.
- Some flat breads (e.g. pita and naan breads) contain a small amount of yeast which allow them to rise and produce 'pockets' when cooked.
- Some sourdough and pumpernickel breads use a starter that includes yeast and a lactobacillus culture.
- Yeast extract such as Marmite®, Vegemite®, Bovril®, stock cubes and gravies.
- Fermented food and drink such as beer, wine, cider, spirits, ginger ale, vinegar, soy sauce and dressings.
- Tempeh, miso and tamari (Japanese/Indonesian seasonings made by fermenting soy beans).
- Vinegar containing foods such as pickles, relishes, salad dressings, tomato ketchup, mayonnaise, Worcestershire sauce, horseradish and chili sauce.
- Mushrooms, mushroom sauce and truffles contain organisms closely related to yeast.
- Pickled, smoked and dried fish, meat and poultry.
- Cured pork bacon.
- Peanuts and peanut products.
- Pistachios.
- Ripe foods, especially very ripe cheeses such as Brie and Camembert.
- Malted milk, malted drinks and home-made ginger beer.
- Textured vegetable protein, Quorn™ (mycoprotein) and tofu.
- Dried fruits (figs, dates, raisins, apricots, etc).
- Over-ripe fruit, any unpeeled fruit.
- Fruit juices – only freshly squeezed are yeast-free.
- Hydrolyzed protein, hydrolyzed vegetable protein or leavening - check the ingredients label.
- Citric acid and monosodium glutamate (MSG) may be derived from yeast.
- Some nutritional supplements – check the ingredients label.

How To Avoid Yeast

INGREDIENTS TO AVOID	ALTERNATIVE FOODS
<ul style="list-style-type: none"> Hydrolyzed protein Hydrolyzed vegetable protein Leavening Nutritional yeast 	<p>The following foods are yeast-free:</p> <ul style="list-style-type: none"> Pasta, brown rice, brown flours, corn, wild rice, buckwheat, couscous, barley and millet. Rice cakes, oat cakes, corn tortillas, tacos and rye-crispbreads (e.g. Ryvita®). Home-made breads (with baking powder/bicarbonate soda for leavening). Also muffins, biscuits, chapatis and Irish soda bread. Flatbreads that do not contain yeast (e.g. matzos and flour tortillas). Pancakes and crepes use baking soda or baking powder instead of yeast. Fresh, frozen or canned vegetables and vegetable juice. Particularly good are onions, garlic, green leafy vegetables (e.g. cabbage, broccoli and kale), Brussels sprouts, spring greens, etc). Salad vegetables such as salad leaves, herbs, arugula, spinach, peppers, alfalfa sprouts, avocado, etc. Peas, beans and lentils. Free range/organic poultry, lamb, pork, beef and veal. Fish: especially mackerel, sardines, cod, salmon, herring, tuna and trout. Shellfish Free-range eggs, soy milk, cottage cheese and plain organic live yogurt (the lactobacilli content can help re-balance the gut flora). Non-citrus fruits such as blackcurrants, strawberries and tropical fruits (e.g. pineapple, papaya, mango, kiwi and banana).



Frequently Asked Questions

- Q** Is it possible to be affected by foods that are not detected by the **RMA FST™**?
- Foods that cause a classic IgE allergic reaction (Type I allergy) will not be detected by the **RMA FST™** as it only measures IgG antibodies. Many foods can cause reactions that do not involve the immune system, but cause allergy or sensitivity-like symptoms. For example: amines found in chocolate, cheese and red wine may cause migraines; some food additives such as tartrazine, can trigger hives, rashes and asthma; monosodium glutamate (MSG) can trigger sweating and dizziness; the 'nightshade' alkaloids found in potatoes, tomatoes and peppers may affect the joints. If you experience digestive symptoms like cramping, bloating, excess gas and irritable bowel, poor absorption of small carbohydrates known as FODMAPs may be a contributing factor. Symptoms may also be due to a food intolerance, such as a deficiency of a particular enzyme: as in lactase deficiency causing lactose intolerance. Avoid foods if you suspect they are causing adverse effects. Your healthcare professional can help determine whether non-immune mediated reactions are contributing to your symptoms.
-
- Q** I have been avoiding a food for several months/years. Will this affect my test results?
- The **RMA FST™** test measures levels of IgG antibodies produced in response to certain foods. If a food has been avoided for more than 3 months, IgG antibody levels could be insufficient to be detected by the test and may give a **NORMAL** result. To test sensitivity to a certain food, it should be included in the daily diet, or at least every other day, for 4 to 6 weeks before testing. However, if the food concerned is known to cause extreme symptoms/discomfort, do not reintroduce it.
-
- Q** What does U/ml mean?
- U/ml stands for 'Units per millilitre' and is a measure of concentration. The result for each food listed in the Test Report is expressed in U/ml, which shows the concentration of food IgG antibodies detected in the blood sample provided.
-
- Q** Who should I discuss my test results with?
- Once you have received your **RMA FST™** test results, the healthcare professional who requisitioned your test can assist you in making decisions regarding diet and supplements. Your healthcare professional may also offer support and encouragement with regular progress checks, as persevering with a new diet on your own can be challenging.
-
- Q** If cow's milk is **ELEVATED**, does this mean that I am lactose intolerant?
- No. Lactose intolerance is the inability to digest lactose, the major sugar found in milk, and is caused by a deficiency of the enzyme lactase. The **RMA FST™** test detects IgG-mediated food sensitivities caused by the specific proteins found in milk, but does not detect the lactase enzyme and, therefore, cannot diagnose lactose intolerance.
-
- Q** Is the **RMA FST™** suitable for testing children?
- Yes, but we recommend a minimum age limit of 2 years. Your healthcare professional may choose to test children under two years if he or she deems it clinically necessary.

Frequently Asked Questions

Q [Is gluten-free the same as wheat-free?](#)

No. A product can be wheat-free but not gluten-free and vice versa. Products are available that are both gluten-free and wheat-free, but it is important to read the ingredients label to be certain. The **RMA FST™** test uses wheat, barley and rye food extracts that do not contain gluten, and we test gliadin (a storage protein found in gluten-based grains) separately.

If your Test Report shows an **ELEVATED** reaction to gliadin, it is important to eliminate any foods that contain gluten-based grains and substitute with naturally gluten-free foods, such as quinoa, buckwheat, corn, oats and wild rice. If your Test Report shows an **ELEVATED** result for wheat, rye or barley, but NOT for gliadin, the reaction may be due to one of the other proteins found in the grains.

Q [Why is gliadin tested separately from the gluten-containing grains?](#)

The **RMA FST™** test uses water-soluble food extracts to detect food-specific IgG antibodies. Grain extracts, however, do not contain gliadin (gluten) because gliadin is only soluble in alcohol and cannot be extracted with the rest of the grain. For this reason, gliadin is tested separately.

Q [Do I need to be cautious when removing a food group from my diet?](#)

Yes, removing an entire food group from the diet can be detrimental to your health. It is important to include a variety of foods in the diet to ensure that important vitamins and minerals are consumed. Discuss any planned dietary changes with your healthcare professional prior to implementing.

Q [Will I need to re-test after a few months?](#)

Most people do not need to have a re-test, but if you would like to take another test, we advise waiting at least 6 months between tests. If symptoms have improved and you have successfully re-introduced highly reactive foods, a re-test is generally unnecessary.

Q [Why do I react against a food that I have never eaten?](#)

Patients occasionally react to foods that they are convinced they have never eaten. Although not unusual, it is not a false positive result, but instead a 'cross-reaction' with another food. Some foods contain identical antigens (food proteins), even though they are not related to each other and/or do not belong to the same food group. These identical food proteins will be detected by the same antibody, thus producing an **ELEVATED** result. Please contact Rocky Mountain Analytical for further information regarding cross-reactions.

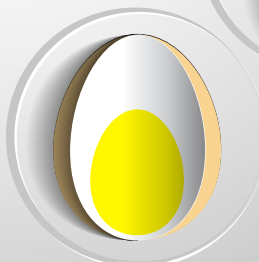
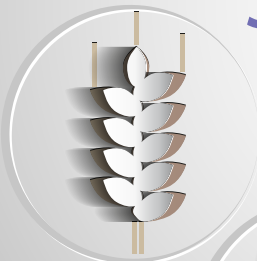
Q [What if I don't experience any improvement at all?](#)

If, after changing your diet according to the test results, improvements have not been achieved after 3 months, food sensitivity is unlikely to be the cause of your symptoms and other investigations should be undertaken. Results of the **RMA FST™** are intended as a guide to diet alteration only and should always be used in conjunction with advice from a healthcare professional.



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Food Sensitivity Facts



Rocky Mountain Analytical®
Changing lives, one test at a time

FOOD SENSITIVITIES ARE NOT FOOD ALLERGIES

Food allergy is a potentially serious health condition triggered by the release of IgE antibodies to a specific food. Food allergy symptoms typically appear very soon after eating a problem food (e.g. peanuts).

Reactions may include a condition called anaphylaxis, which can be life-threatening; hives (red swollen patches on skin); breathing difficulties and other symptoms. Although it is possible to measure IgE antibodies in the blood, having IgE antibodies to a particular food shows a reaction is likely, but doesn't reveal how serious the reaction might be.¹ The scientific term for an IgE reaction is Type I Hypersensitivity.

Food sensitivity typically takes months to develop and is triggered by IgG antibodies. The release of IgG antibodies to specific foods is considered normal, as is the formation of antigen-antibody complexes (which form when a food antigen meets an IgG antibody and they bind together).²

Cells called macrophages typically remove these complexes; however, when many antigen-antibody complexes are present, macrophages may not be able to remove them all. The complexes that are left behind deposit in tissue and release substances that promote inflammation.³

Inflammation is much more likely to occur if the reactive food remains a regular part of the diet since more immune complexes will form, and in turn may trigger inflammation and contribute to a variety of symptoms.





Comparing IgE and IgG

	IgE	IgG
What causes symptoms?	Mast cells 'recognize' the food allergen and release histamine and other substances that may cause hives, difficulty breathing, low blood pressure and anaphylaxis.	An immune complex forms between food antigen and IgG antibody. Complexes that are not removed by macrophages deposit in tissue, causing inflammation.
How quickly do symptoms appear?	Symptoms appear quickly, usually within minutes of eating the food allergen.	Symptoms are slow to appear, and it may be months before they are apparent.
How long do symptoms last?	Symptoms usually last no more than a few hours.	Inflammation caused by IgG reactions can persist for weeks or months.
Which foods trigger reactions?	Any food could potentially trigger a food allergy.	Food sensitivities are usually caused by foods eaten regularly, because regular consumption means more immune complexes will be formed.
What amount of food triggers a reaction?	Even a small amount of food can trigger a food allergy.	Eating more of a reactive food means more immune complexes will be formed
Can dietary responses point out food trigger?	People often know which food triggered the allergy.	People are usually are not aware of the foods they have sensitivities to.
How long can symptoms persist?	Food allergies can last a lifetime, or may go away spontaneously.	Symptoms may continue for several months after the reactive food has been eliminated from the diet. Once symptoms clear, it is sometimes possible to add the reactive food back into the diet on an occasional basis.

Adapted from Mullin et. al.⁴



FOOD SENSITIVITIES ARE REAL

Food sensitivity is not a disease, but may play a role in causing disease or worsening certain symptoms. Food sensitivities begin with the immune system and eventually cause inflammation. Here's how:

- The immune system makes five major antibodies, which are known by different letters: G, E, A, M and D. The G type, called IgG, is the most common. Of all antibodies found in blood, 80% are IgG. Food sensitivities are an IgG antibody reaction.
- The reason IgG antibodies are produced to certain foods is not well understood, but allergists consider it “normal and natural”.² In contrast, IgG antibodies produced to other non-food antigens may result in serious health conditions like Lupus, Farmer's lung, and serum sickness.³
- When an IgG antibody meets a molecule of its food antigen in the blood, it creates an antigen-antibody complex, also called an immune complex.
- Most IgG immune complexes can be safely removed by cells called macrophages.
- Having many IgG antibodies to a food that is eaten regularly leads to the formation of immune complexes. Having an excess of immune complexes may mean macrophages fail to remove some of the immune complexes. The immune complexes left behind deposit in tissue and trigger inflammation.^{2,3} This is called Type III hypersensitivity.

IgG reactions, or Type III hypersensitivities, are well known in medicine, but there is some controversy as to whether immune complexes formed between IgG and food antigens can cause symptoms. Allergists agree that complexes to food are formed; but not all allergists agree that IgG antibody-food complexes have the potential to cause inflammation. There is, however, a growing body of evidence that suggests IgG food sensitivities do play a role in creating inflammation and contribute to symptoms of a variety of diseases.

EFFECTS OF FOOD SENSITIVITIES

Food sensitivity is an evolving area of research and new studies on the role of IgG in food reactions are released every year. The following conditions have shown improvement in patient symptoms when IgG reactive foods were removed:



IRRITABLE BOWEL SYNDROME

STUDY #1: In a 2005 study, 150 people suffering from irritable bowel syndrome (IBS) volunteered to find out whether food sensitivity testing could play a role in relieving IBS symptoms. After completing a food sensitivity test, patients were given a diet to follow. Some received the 'true' diet – based on their actual results, while others received a 'sham' diet, which did not eliminate any of the reactive foods. Neither the patients nor their doctors knew which diet the patient was following. Only after three months had passed did researchers and participants learn which diet was assigned to which patient. The researchers found that patients who followed the 'true' diet saw noticeable improvement in their IBS symptoms compared to the patients who had been assigned the 'sham' diet.⁵

OTHER STUDIES: More recent studies have also shown improvement in symptoms of irritable bowel syndrome when IgG reactive foods were removed from the diet of IBS sufferers.^{6,7,8,9,10}



MIGRAINE HEADACHES

Several small studies have shown that removing IgG reactive foods from the diet helps reduce the frequency of migraine headaches and decreases the need for headache relief medications.^{7,11,12}



WEIGHT

STUDY #1: In 2008, diabetes researchers found that obese children had more IgG antibodies to foods than children of normal weight. Obese children also had more C-reactive protein (CRP), which is a good indicator of inflammation in the body. In other words, they found a strong connection between IgG food antibodies and inflammation, which fits with what we know about Type III hypersensitivity reactions like food sensitivities.¹³

STUDY #2: Over one hundred men and women who wanted to lose weight participated in an IgG food sensitivity study. After receiving their IgG food sensitivity test results, the participants voluntarily stopped eating their reactive foods. They answered a series of health questions at the 30, 60 and 90 day marks, and measurements (weight, hip and waist size) were taken.

The results showed that individuals who stopped eating IgG reactive foods for 90 days lost an average of 1 pound per week, 3 inches from the hips, and 1.5 inches from the waist, plus they felt better physically, mentally, and emotionally. Improvement in social functioning and general health was also seen. The foods most commonly removed were: Brewer's yeast, Baker's yeast, wheat, cow's milk and eggs.¹⁴

LARGE STUDY SHOWS FOOD SENSITIVITY TEST RESULTS CAN LEAD TO SYMPTOM RELIEF

The British Allergy Foundation (known as Allergy UK) commissioned a study of patients who had recently received an IgG food sensitivity test (within the previous 3 months). The goal of the study was to find out whether removing reactive foods from the diet improved patients' symptoms. The results were published in *Nutrition & Food Science* in 2007.¹⁹ Of the over 5000 patients included, 70% rigorously followed the results and eliminated all their reactive foods.

Patients who successfully removed reactive foods from their diets saw improvement in a variety of symptoms, most within 3 weeks. Symptom improvement was shown to be directly related to the removal of the reactive foods as symptoms returned when the reactive foods were reintroduced into the diet.

76%

saw significant
symptom
improvement

68%

saw benefit
within three
weeks

92%

had symptoms
return when
reactive food
added back to
diet

Symptom relief varied by body system, with digestive symptoms like irritable bowel syndrome and psychological symptoms like anxiety and depression, showing the greatest improvement when reactive foods were removed.

Digestion



80%

reported
moderate to
high benefit

Lungs



72%

reported
moderate to
high benefit

Neurology



78%

reported
moderate to
high benefit

Skin



76%

reported
moderate to
high benefit

Joints



64%

reported
moderate to
high benefit

Mind




81%

reported
moderate to
high benefit

(Source: Hardman G, Hart G. NFS. 2007;37(1):16-23)

This study showed that patients who removed reactive foods from their diets experienced noticeable improvement in symptoms. The fact that symptoms returned when the reactive foods were reintroduced into the diet is further evidence that these foods contributed to symptoms. The authors conclude that food sensitivity testing is a useful tool for identifying the cause of certain symptoms.



Published research also shows the benefits of removing IgG-reactive foods for several other health conditions. They include: functional dyspepsia (indigestion)⁸, Crohn's disease (a serious type of inflammatory bowel disease),¹⁵ and Sjögren's syndrome,¹⁶ an immune disease.

Antibodies to yeast (Brewer's yeast, Baker's yeast, candida) may also play a role in inflammation and disease.¹⁷ And, high levels of IgG antibodies to foods have been found in individuals with bipolar disorder¹⁸ and in obese children.¹³

FOOD REACTIONS MAY HAVE MANY DIFFERENT CAUSES

Food sensitivities and food allergies are immune responses to food, but not all reactions to food are caused by the immune system. A good example is lactose intolerance, which causes bloating and discomfort after drinking milk or eating dairy foods. Lactose intolerance is due to a lack of lactase, the enzyme that breaks down lactose sugar in milk, not an immune reaction.

Digestive symptoms may occur when poorly digested carbohydrates (foods called FODMAPs) ferment in the gut.²⁰ Fruit, beans, and wheat are examples of foods that are FODMAPs.

And finally, certain foods have naturally occurring chemicals that some people react to. For example, some foods are high in histamine, a chemical that promotes inflammation. People who are highly sensitive to histamine are more likely to experience problems after eating these foods.²¹

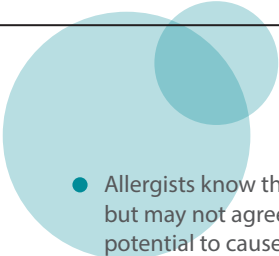
Therefore, when a normal IgG result is reported for a food that usually causes someone symptoms, it is unlikely he or she has a food sensitivity. It could be an IgE food allergy, which does not always show elevated IgG levels; or it could be a non-immune reaction like an intolerance, FODMAP, or reaction to naturally occurring chemicals as described above.

FOOD SENSITIVITY TESTING IS MISUNDERSTOOD

Food sensitivity is an immune process that leads to inflammation, which may contribute to symptoms of disease. However, food sensitivity is not a disease. As a result, some healthcare professionals may be unclear on the purpose of food sensitivity testing. Further misunderstandings may arise from the following:

- IgG food reactions are sometimes confused with IgE food allergies. The term allergy is used exclusively for IgE food reactions, which are typically diagnosed by allergy specialists. Referring to food sensitivity as an IgG food allergy is incorrect, since no such condition exists. Only when someone has an IgE reaction to foods should the term food allergy be used. An IgG reaction to food should be called food sensitivity.
- One subtype of IgG antibodies helps protect against IgE food allergies. As a consequence, many allergists see IgG reactions as something positive, because this one IgG subtype may help protect against serious food allergies. However, this subtype behaves differently than the other IgG antibody subtypes. The majority of IgG antibodies (95%) form complexes with antigens (like food) that trigger inflammation, and provide no benefit against IgE food reactions.²²



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- Allergists know that making IgG antibodies to some foods is normal, but may not agree that IgG-food antigen immune complexes have the potential to cause inflammation.
 - Food sensitivities develop slowly, so there is rarely an obvious link between eating a food and the appearance of symptoms. This makes IgG food reactions very different from food allergies, where reactions are usually seen right away. To some dietitians and allergists, it can seem like patients are removing foods unnecessarily, which is why it is important to work with health professionals like naturopathic doctors to ensure foods are removed appropriately and that the right nutrients are included in the diet.
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SUMMARY

Food sensitivities are very different from food allergies. The symptoms associated with food sensitivities develop slowly over time as IgG antibody-food antigen immune complexes deposit in various parts of the body and trigger inflammatory reactions. Depending on where the immune complexes deposit, inflammation can contribute to a variety of different health conditions.

Numerous studies in peer-reviewed journals have shown the health benefits of removing IgG reactive foods, particularly for Irritable Bowel Syndrome,^{6,7,8,9,10} migraine headaches,^{11,12} and weight management.^{13,14,23} There is good evidence that most patients experience improvement in symptoms when IgG reactive foods are removed from the diet.¹⁹

Rocky Mountain Analytical remains committed to meeting the needs of healthcare professionals and patients for an accredited, reputable, industry-leading Canadian laboratory for food sensitivity testing.

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