

lgGフードMAP - lgG食物過敏症プロファイル 革新的な免疫蛍光法ビーズテクノロジーを用いたGPLの新検査

IgG フードMAPが優れている6つの理由

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190の食物を分析

このパネルにはアメリカ、アジア、地中海の食事で一般的な幅広い食品が含まれ、また検体要件を0.5 mLの血清または3つの乾燥血液スポットと少ない血液量でも検査を可能としました。

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感度と特異性の向上

GPLの蛍光読み出しを備えたxMAP®アッセイ(免疫学的検査) は、ELISA検査よりもさらに感度が高いことがわかっていま す。 IgGフードMAP検査は、検査用に開発した最新のテクノロ ジーを用い、ELISA検査よりも高い精度で陽性および陰性の検 体を検出します。



画期的なテクノロジーを適用

食物抗原に特異なlgG抗体は、xMAP®テクノロジーを使用して、 多重磁気ビーズによって仕分けられます。 xMAP®ビーズベース の免疫学的検査は、たった2つのウェルで190の食品すべてに対 するlgG抗体の同時検出を可能にし、従来のプレートベースの ELISA試験の感度と特異性を失うことなく、検体量の要件と試 薬を削減します。 アップグレードされた免疫学的検査はより早 く、より簡単に効率よく再現性の高い検査を提供します。



結果の信頼性の向上

多重磁気ビーズベースの免疫学的検査では、食品の抗原性タン パク質がまずビーズに共有結合されます。ビーズは患者の検 体と混合され、ビーズに結合した抗原が検体に存在する特定 のlgG抗体を捕捉します。各検体の食品特異的であるlgG抗体 レベルは、lgGに対して蛍光識別された抗体で検出されます。 また、すべての検査で、正確な結果を保証するための追加の品 質コントロールビーズも含まれています。蛍光信号は、xMAP[®] アナライザーを使用して測定されます。抗原特異的ビーズごと に検出される食品特異的抗体の量は、蛍光シグナルに正比例 します。蛍光量が高いほど、より特異的なlgG抗体が検体中に 存在します。検査結果の確認段階では、品質保証(QA)チー ムが、機器と試験法の仕様が品質管理測定の範囲内であるこ とを慎重に検証します。



環境にやさしいテクノロジー

xMAP®ビーズベースの技術は環境に優しく、プラスチック汚染を低減します。ELISAの190食品のパネルでは、1検体あたり190ウェル(2プレート)が必要です。対照的に、ビーズベースのプラットフォームでは、1検体あたり2つのウェルしか必要ありません。 言い換えると、ELISAでは48検体の検査を行うために96ものプレートを使用しますが、xMAP技術は1プレートで行うことができます。



特定の食品抗原タンパク質の検査

今回の更新で、GPLはELISAの単一検体検出から複数検体検出 に技術革新を行っています。多重化されたビーズベースの試 験法は、ビーズに共有結合された食品抗原タンパク質に対す るIgGのみを検出するため、ELISAよりもタンパク質に特異的で す。ELISAでは、タンパク質の共有結合はなく、代わりにタンパ ク質や他の抗原がプラスチックウェルの表面に吸着し結合し ます。カンジダやその他酵母菌などの糖鎖(グリカン)に富 んだ分子は表面のこの非特異性により結合できます。このた め、GPLは、この2つの酵母菌のみELISAを利用します。また、 追加された数多くの食品目の中で、追加された麻(ヘンプ)は 医療CBDを利用する方へ興味深いマーカーとなるでしょう。

What is IgG?

IgG is the major antibody found in serum. IgGs are composed of two fragment antigen binding (Fab) regions that contain the antigen binding sites and the Fc region, which is responsible for most of the biologic activity of the antibodies (Figure 1). An antigen is a substance that causes the immune system to produce an antibody that specifically reacts with it. IgG-mediated reactions to food antigens may be delayed by several hours or days, whereas IgE food antibody reactions are quite immediate.

Human IgG is separated into four subclasses denoted IgG1, IgG2, IgG3, and IgG4. Each subclass varies in abundance and biological function. IgG1 and IgG3 are predominantly responsible for antibody protection against reinfection. IgG2 antibodies are opsonic (marking a pathogen for ingestion and destruction) and develop in response to carbohydrate polysaccharide antigens. IgG4 molecules function as skin-sensitizing immunoglobulins and are thought to block antibodies produced in response to chronic exposure to antigens.



Why Test IgG Sensitivities?

Immunoglobulin G (IgG) food testing is a useful guide for structuring elimination diets for patients with many chronic conditions. Individuals with neurological, gastrointestinal,

movement, and behavioral disorders often suffer from IgG food sensitivities. People may continue to eat offending foods unaware of their potential adverse effects. Symptoms associated with food sensitivities may occur hours or days after the offending food was eaten because IgG food antibodies remain for a much longer time than traditional IgE antibodies. As immunological reactions, IgE food allergy causes the release of histamine, producing an immediate hypersensitivity reaction, in which symptoms appear within minutes or hours. In contrast, food sensitivity is a non-IgE allergy characterized by the measurement of IgG antibodies specific to antigenic food proteins. This is a delayed hypersensitivity reaction in which symptoms appear anywhere from hours to days after eating the offending food. Elimination of IgG-positive foods may improve symptoms of irritable bowel syndrome, autism, AD(H)D, cystic fibrosis, rheumatoid arthritis, and epilepsy, according to numerous clinical studies.

Clinical Significance of IgG Testing

The clinical significance of IgG food testing was illustrated in an early article published by an otolaryngologist who reported that the majority of his patients had substantial health improvements after eliminating foods found positive by IgG food allergy testing. The study demonstrated a 71% success rate for all symptoms achieving at least a 75% relief. Of particular interest was the group of patients with chronic, disabling symptoms, unresponsive to other intensive treatments. Symptoms most commonly improved (75%-100%) on the elimination diets included asthma, coughing, ringing in the ears, chronic fatigue, headaches, gas, bloating, diarrhea, skin rash and itching, and nasal congestion. The most common IgG food allergies were to cow's milk, garlic, mustard, egg yolk, tea, and chocolate. A recent study reported that 93% of non-celiac, gluten-sensitive patients showed anti-gliadin IgG antibody disappearance after a six-month adherence to a gluten-free diet. The IgG disappearance was closely related to a significant improvement of both gastrointestinal and extra-intestinal symptoms.

High IgG antibody levels have frequently been found in children with diabetes mellitus, Crohn's disease, celiac disease, and in those considered to be obese. IgG food test results are often used to develop food antibody-guided exclusion/ elimination diets. The implementation of such diets has been shown to alleviate symptoms associated with non-celiac gluten sensitivity and food sensitivity-induced atopic conditions, reduce the frequency of migraine headaches, decrease the occurrence of diarrhea, decrease failure–to-thrive among children with cystic fibrosis, reduce symptoms of irritable bowel syndrome, improve rectal compliance, decrease stool frequency in Crohn's disease, prevent seizures and hyperkinetic behavior in children with epilepsy, and ameliorate kidney function in glomerulonephritis. Food elimination diets also hold promise for the improvement of behaviors associated with attention-deficit hyperactivity disorder.



Significance of Total IgG Versus IgG4

The goal of IgG-mediated food allergy testing is to identify foods that are capable of triggering a large number of adverse reactions. IgG1, IgG2, and IgG3 are all capable of causing inflammation. IgG1, IgG2, and IgG3 antibodies to food antigens form large immune complexes or lattices that activate complement proteins and increase inflammation. IgG4 antibodies to food antigens will not usually trigger inflammation, though high levels of these antibodies do indicate the presence of immune reactions against food antigens.

While most laboratories only provide a measurement of IgG4 molecules, The Great Plains Laboratory provides a measurement of total IgG antibodies to various food-based antigens and Candida, a genus of yeast native to the GI tract. Testing for only IgG4 antibodies limits the ability of the clinician to identify those foods that may be causing significant clinical reactions in their patients. IgG4 antibodies usually represent less than 6% of the total IgG antibodies. The importance of measuring all subtypes of IgG antibodies is highlighted in an article by Kemeny et al. They found that IgG1 antibodies to gluten were elevated in all patients with celiac disease but none of the patients had elevated IgG4 antibodies to gluten.

The IgG and Candida Connection

The Great Plains Laboratory tests for *Candida albicans* (a microscopic fungal organism and pathogenic yeast) as part of IgG food allergy testing. High levels of IgG antibodies to *Candida* have been found in patients who reported many symptoms of yeast overgrowth. *Candida* problems are caused when the benign yeast form of *Candida albicans* transforms to its fungal form and produces a buildup of toxins in the body. *Candida* can overgrow areas of the intestinal

mucosa resulting in numerous symptoms, including creating microscopic holes in the lining of the intestines, leading to what is commonly known as "leaky gut" syndrome. If *Candida albicans* proteins enter the blood, an inflammatory immune system response may be triggered. A wide range of disorders have been linked to *Candida* overgrowth including autism, multiple sclerosis, depression, chronic fatigue, fibromyalgia, migraines, and irritable bowel syndrome. Immunocompromised patients with cancer or AIDS can have life-threatening complications if *Candida* enters the bloodstream, resulting in systemic candidiasis. Use of antibiotics, oral contraceptives, chemotherapy, anti-inflammatory steroids, and diets high in sugar and starch increase susceptibility to *Candida* overgrowth.

Research has revealed a relationship between health of the gastrointestinal tract and overall well-being. Imbalance between good and bad bacteria (dysbiosis) has been shown to worsen behavior disorders, hyperactivity, aggression, and cause fatigue. Evidence is mounting that dysbiosis impairs the immune system and contributes to food allergies, digestive disorders, nutritional deficiencies, and cognitive dysfunction. Using the GPL Food MAP (which will include a separate report for *Candida* and brewer's yeast) will help identify food allergies and *Candida* sensitivity that may be creating a variety of problems for patients. Practitioners may then recommend elimination of the identified foods and supplementation with various natural products that control *Candida* overgrowth and assist with healing of the gut. Depending on the levels of *Candida* and the severity of a patient's symptoms, further testing may be recommended, including a Comprehensive Stool Test or Organic Acids Test.

Multiple Analyte Profiling with xMAP® Technology

The bead-based immunofluorescent assay uses color-coded magnetic beads, which are covalently coupled to 190 different food proteins specific each protein's IgG target. The color-coding of the beads into spectrally distinct sets allows the simultaneous capture and detection of multiple food IgG analytes from a single reaction well.

The xMAP® bead-based immunoassay occurs on the surface of magnetic beads by adding a patient's sera sample and looking for the classic antigen/antibody interaction, detected by using a fluorescent labeled antibody. Laser-based analysis of the fluorescent signal response is proportional to the binding of food specific IgG antibodies onto the beads.



Vegetables

Artichoke

Avocado

Beet

Asparagus

Bamboo Shoot

Bean Sprout

Bell Pepper

Bitter Gourd

Brussel Sprout

Burdock Root

Broccoli

Cabbage

Cauliflower

Chili Pepper

Enoki Mushroom

Cucumber

Eggplant

Garlic

Kale

Leek

Lettuce

Onion

Potato

Radish

Spinach

Tomato

Yam

Kelp

Pumpkin

Seaweed Kombu

Seaweed Wakame

Shitake Mushroom

Seaweed Nori

Sweet Potato

Yellow Squash

Lotus Root

Olive Green

Portabella

Mushroom

Napa Cabbage

Carrot

Celery

Yuca

Zucchini

Herbs/Spices

Bay Leaf

Cilantro

Cloves

Cumin

Curry

Ginger

Hops

Mint

Miso

Oregano

Rosemary

Tarragon

Turmeric

Miscellaneous

Coffee

Honey

Bromelain

Cane Sugar

Cocoa Bean

Green Tea

Meat glue

Oolong Tea

5

Vanilla Bean

Thyme

Paprika

Sage

Mustard Seed

Dill

Cinnamon

Black Pepper

Cayenne Pepper

Basil

Analyte List (190 Foods + Candida)

Dairy

- Beta-Lactoglobulin
- Casein
- Cheese Cheddar
- Cow's Milk
- Goat's Milk
- Mozzarella Cheese
- Sheep's Yogurt
- Whey
- Yogurt

Beans and Peas

- Adzuki Bean
- Black Bean
- Garbanzo Bean
- Green Bean
- Green Pea
- Kidney Bean
- Lentil
- Lima Bean
- Mung Bean
- Navy Bean
- Pinto Bean
- Soybean
- Tofu

Fruits

- Acai Berry
- Apple
- Apricot
- Banana
- Blueberry
- Cantaloupe
- Cherry
- Coconut
- Cranberry
- Date
- Grape
- Grapefruit
- Guava
- Jackfruit
- Kiwi
- Lemon

- Lychee Mango
 - Orange
- Papaya
- Passion Fruit
- Peach

- Pear
 - Pineapple
 - Plum
 - Pomegranate
 - Raspberry Strawberry
 - Watermelon

Grains

- Amaranth
- Barley
- Buckwheat
- Corn
- Gliadin
- Malt
- Millet
- Oat
 - Ouinoa
 - Rice
 - Rye
 - Sorghum
 - Teff
- Wheat Gluten
- Whole Wheat

Fish/Seafood

- Abalone
- Anchovy
- Bass
- Bonito
- Codfish
- Crab
- Halibut
- lack Mackerel
- Lobster
- Mackerel Saba
- Octopus

- Oyster
- Pacific Saury
- Perch
 - Red Snapper
 - Salmon
 - Sardine
 - Scallop Shrimp
 - Small Clam
 - Squid
 - Tilapia
 - Trout
- Tuna

Meat/Fowl

- Beef
- Chicken
- Duck
- Egg White
- Egg Yolk Goose

Lamb

Pork

Nuts/Seeds

Almond

Cashew

Chestnut

Chia Seed

Flax Seed

Hazelnut

Peanut

Pecan

Pine Nut

Pistachio

Walnut

Pumpkin Seed

Sesame Seed

Sunflower Seed

Hemp Seed

Macadamia Nut

Brazil Nut

Turkey

Sample Report

The Great Plain	s Laboratory, LLC	2		≻lgG	od P
Requisition #:	9900001		Physician Name:	NO PHYSICIAN	
Batient Name:	Sample		Date of Collection:	Nov 25, 2021	
Patient Name.	0		Time of Collection:	10:00 AM	
Date or Birth:	Sep 19, 1961		Relat Date:	New 30, 2021	
Gender:	۴		This bate.		
IgG Food MAF	P - Serum (190)	MFI x 1000			
Dairy			Date		0.4
Beta-Lactoglobulin		0.65	Fig		0.4
Casein		28.29	Grape		0.4
Cheddar Cheese		19.79	Grapetruit		0.3
Cow's Milk		20.78	Guava lasterat		0.5
Goat's Milk		4.07	Jackifult		0.5
Mozzarella Cheese		16.28	Lomon		11.4
Sheep's Yogurt		0.29	Luchon		0.2
Whey		21.33	Manno		0.2
Yogurt		21.93	Orange		24.2
Beans and Peas			Papaya		0.2
Adzuki Bean		0.16	Passion Fruit		1.2
Black Bean		0.20	Peach		12.1
Garbanzo Bean		1.44	Pear		12.2
Green Bean		0.39	Pineapple		4 1
Green Pea		1.46	Plum		0.5
Kidney Bean		0.18	Pomegranate		0.5
Lentil		0.55	Raspberry		0.0
Lima Bean		0.13	Strawberry		16.5
Mung Bean		0.09	Watermelon		25.4
Navy Bean		0.23	Crains	<u> </u>	
Pinto Bean		0.25	Amaranth		0.5
Joyuedii		4.35	Barley		0.0
1010		0.21	Buckwheat		0.3
Fruits			Corn		0 2
Acai Berry		0.35	Gliadin		12 6
		14.32	Malt		0.2
Apricot		11.72	Millet		0.5
sanana		5.22	Oat		0.5
Blueberry		35.39	Quinoa		12 3
Jantaloupe		19.52	Rice		0.4
Unerry		2.76	Rye		13
Loconut		1.39	Sorghum		04
Jranberry		0.34	-		

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e Great Plains	Laboratory, LLC		
Requisition #:	9900001	Physician Name:	NO PHYSICIAN
Patient Name:	Sample	Date of Collection:	Nov 25, 2021
Date of Birth:	Sep 19, 1981	Time of Collection:	10:00 AM



NO PHYSICIAN Nov 25, 2021 10:00 AM Nov 30, 2021	
Nov 25, 2021 10:00 AM Nov 30, 2021	
10:00 AM Nov 30, 2021	
Nov 30, 2021	
NOV 30, 2021	
	0.24
	0.13
	0.20
	0.26
	0.37
	0.30
	1.13
	0.79
	0.59
	0.36
	153.58
	1.35
	0.26
	0.54
	0.36
	0.13
	0.21
	0.24
	1.11
	0.73
	24.68
	15.00
	0.00
	0.62
	0.27
	U.30
	U.16
	0.54
	0.49
	0.48
	0.48
	0.59
	0.90

Testing performed by The Great Plains Laboratory , LLC., Overland Park, Kansas. The Great Plains Laboratory has developed and dete characteristics of this test. This test has not been evaluated by the U.S. Food and Drug Administration. 2

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The Great Plains	Laboratory, LLC
Requisition #:	9900001
Patient Name:	Sample
Date of Birth:	Sep 19, 1981
Gender	F

Physician Name NO PHYSICIA Date of Collection Time of Collection

Print Date:

Nov 25, 2021 10:00 AM Nov 30, 2021

IgG Food MAP - Serum (190) MFI x 1000

	Reactivity Summary			
		High		
Food Reactivity Scale	MFI* x 1000	Blueberry	Cabbage	Cantaloupe
Not Significant	< 4.47	Casein Cow's Milk	Dill	Cocoa Bean Hazelnut
Low	4.47-9.86	Mango	Mozzarella Cheese	Strawberry
Moderate	9.87-15.99	Tilapia	Walnut	Watermelon
High	>=16	Whey	Yogurt	Zucchini
(*) Modian Elugramont I	atopoity	Moderate		
() wedian Hudresceni i	петық	Apple Egg Yolk Kiwi Peach	Apricot Gliadin Lobster Quinoa	Artichoke Jack Mackerel Meat Glue
		Low		
		Banana	Bromelain	Egg White

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Four Day Rotation Diet – Customized for Sample

Congratulations, The IgG test was an important step in improving your health. A Food Rotation Diet based on your results may further improve your symptoms.

The Great Plains Laboratory, LLC.

FOOD ROTATION DIET BASED ON IGG RESULTS

The following personalized rotation diet is presented as an example of this approach to symptom reduction based on your IgG results.

Foods that showed elevated IgG levels on your test (those in the moderate or high categories) have been removed from rotation. Your rotation diet is constructed from the foods that tested in the clinically insignificant or low categories on your results. Foods were grouped by food millines, such as the cabbage family or the fish family, as related organisms are more likely to share similar proteins with similar immune reactivity.

Rotation diets are a recommended method for reducing negative responses to foods:

In general, estimation of the second second

Rotation diets may reduce overall food reactivity:

Eating similar foods every day is an easy pattern to adopt for busy lives, however, this behavior may increase food reactivity. Rotating foods decreases the burden on the immune system and possibly reduces overall toxin load, while providing adequate nutrition and variety. Food carvings may leasen and awareness of responses to specific foods may be heightened. Rotating foods may also 'unmask' hidden food sensitivities, especially if a detailed food and symptom daily record is maintained.

Please note that the rotation diet is based only on IgG testing:

Testing for IgE antibodies to food allergens should be considered PRIOR TO EEGINNING A ROTATION DIET, even if histamine reactions are not symptomatically evident. The most common IgE reactions are to dainy, eggs, pearuts, or seafood. IgE allergies are most common in childhood, and often are outgrown by adulthood.

For additional information and references on IgG and dietary intervention, please visit <u>www.greatplainslaboratory.com</u>, Select A Test – IgG



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Fich/Soafood			
Anchovy Codfish Halibut Sardine	Abalone Crab Octopus Oyster Scallop Shrimp Small Clam Squid	Perch Red Snapper Salmon Trout	Bass Bonito Pacific Mackerel (Saba) Pacific Saury Tuna
Meat/Fowl			
Beef Lamb	Chicken Ducke Goose Turkey	Egg White	Pork
Nuts/Seeds			
Almond Flax Seed Pine Nut Sesame Seed	Chestnut Hemp Saed Pecan Suntower Seed	Cashew Chia Seed Macadamia Nut	Brazil Nut Peanut Pistachio Pumpkin Seed
Vegetables			
Broccoli Brussel Sprout Cauliflower Kale Napa Cabbage Radish Sweet Potato Yam	Beet Bitter Gourd Burdock Root Cucumber Pumpkin Seaweed Kombu Kelp Seaweed Nori Seaweed Nori Seaweed Nakame Spinach Yellow Squash	Asparagus Avocado Bell Pepper Chili Pepper Eggplant Leek Onion Potato Tomato	Bamboo Shoot Bean Sprout Carrot Enoki Mushroom Lettuce Lotus Root Olive (Green) Portabella Mushroom Shitake Mushroom

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Day 1	Day 2	Day 3	Day 4
Dairy		Goat's Milk Sheep's Yogurt	
Beans and Peas Black Bean	Adzuki Bean Mung Bean	Lentii Lima Rean	Garbanzo Bean
Kidney Bean Navy Bean Pinto Bean	Soybean Tafu		Green r ea
Fruits			
Date Jackfruit Lychee Passion Fruit Pear	Acai Berry Grapefruit Guava Lemon Orange Pomegranate	Cherry Cranberry Fig Grape Plum Raspberry	Banana Coconut Papaya Pineapple
Grains			
Millet Sorghum Teff Wheat Gluten Whole Wheat	Amaranth Buckwheat Oat	Com	Barley Mait Roce Rye

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"I believe the Great Plains IgG Food Allergy Test is a phenomenal tool that I have implemented in my practice on a daily basis to help treat patients for a wide variety of symptoms like headaches, IBS, fatigue, abdominal pain, dermatitis, hair loss, joint pain, acne, thyroid disorders, and vitamin deficiencies. I believe I am a better physician due to this testing transforming my ability to properly diagnose and treat patients effectively."

- Bridget, M.D.

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The Benefits of Testing

- IgG testing determines if food reactions are contributing to physical or mental symptoms, and much more quickly than eliminating and then reintroducing each suspect food one-by-one over a period of time.
- Removal of highly reactive foods from the diet is a non-invasive therapy that often mitigates a patient's symptoms.
- Research and clinical studies suggest food allergies identified by IgG testing can be major contributing factors to many chronic health conditions.
- Eliminating all identified IgG-positive foods after testing can reduce stress on the immune system, decrease inflammation (helping to heal "leaky gut"), resolve food cravings, and reduce the potential for eating disorders.

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