

Cyrex Array 4 – Part 2



According to Cyrex, the **highest cross-reactivity with gliadin!**

Important note: Cyrex tests for instant coffee antigen, which has shown to be contaminated with wheat

Whole coffee beans not contaminated with wheat does not show **cross-reactivity to gliadin**

Associated with allergy/hypersensitivity, anaphylactic shock, contact dermatitis, heart arrest, urticaria

Cross-reacts with gum arabic

Coffee. This patient was unfortunately reacting to coffee. According to Cyrex, this coffee is actually the most common cross-reactant with gluten. And there's an important note here—Cyrex tests for an antigen to instant coffee, which has been shown to have been contaminated with wheat. So you'll probably be relieved to know that whole coffee beans that have not been contaminated with wheat do not show cross-reactivity to gliadin, so another reason to drink high-quality coffee if you're drinking coffee at all. Antibodies to this instant coffee are associated with allergy, hypersensitivity, anaphylactic shock, contact dermatitis, heart arrest, and urticaria, and it can cross-react with certain kinds of gums.



Used to make injera, Ethiopian **flat bread**

Sometimes found in **gluten-free** baked goods

Very little published **research**

No known cross-reactivity to gliadin; probably **one of the safest gluten-free alternatives**

If **antibodies** produced to teff, may be because of late introduction into diet

Patient was also producing antibodies to teff, which is used to make injera, the Ethiopian flatbread. If you've gone out to eat Ethiopian food, that might be the only time you've eaten teff. It's not typically used in this country for much else. It is sometimes found in gluten-free baked goods and things like cereals in smaller amounts. We don't have much published research on teff so it's difficult to say for sure, but from what we do have, there's no known cross-reactivity to gluten, and therefore it's probably one of the safest gluten-free alternatives. If antibodies are produced to teff, it may be because it was only introduced to the diet as an adult, since most people didn't eat it when they were kids.



Sensitivity to potato is rare and more often occurs in children (who usually outgrow it)

Associated with allergy/hypersensitivity

Cross-reacts with corn/maize

And the patient was also producing antibodies to potato. Sensitivity to potato is fairly rare, actually, and more often occurs in children who will typically outgrow it, but it's associated with allergy and hypersensitivity and it cross-reacts with corn.

All right, here's another test result.

Casein

Protein in milk and other dairy products

Most common food intolerance in kids

Associated with ASD, autoimmune uveitis, CD

Cross reacts with gliadin, cerebellar, and soy

Up to 50% of **CD patients** are intolerant of casein/dairy

TEST	RESULT			REFERENCE (ELISA Index)
	IN RANGE (Normal)	EOUVOCAL*	OUT OF RANGE	
Array 4 – Gluten-Associated Cross-Reactive Foods and Foods Sensitivity **				
Rye, Barley, Spelt, Polish Wheat	0.43			0.4-1.4
Cow's Milk	0.78			0.1-1.3
Casein (Alpha & Beta)		1.58		0.1-1.7
Casomorphin	0.87			0.2-1.6
Milk Butyrophilin	1.01			0.2-1.8
Whey Protein	0.71			0.1-1.3
Chocolate (Milk)	0.84			0.1-1.4
Oats			1.02	0.2-1.0
Yeast	0.48			0.2-1.2
Coffee	0.68			0.3-1.9
Sesame	0.56			0.1-1.3
Buckwheat	0.60			0.4-1.3
Sorghum		1.12		0.3-1.2
Millet		1.47		0.3-1.5
Hemp	0.84			0.3-1.5
Amaranth	0.64			0.2-1.3
Quinoa	0.67			0.5-1.5
Tapioca	0.48			0.1-1.1
Teff			1.50	0.2-1.1
Soy	0.72			0.5-1.5
Egg			1.90	0.2-1.7
Corn	0.58			0.3-1.4
Rice			1.77	0.4-1.6
Potato	0.90			0.6-1.4

This patient is reacting again to several different antigens, and the first one I want to cover is casein. So this is a protein in milk, another protein in milk, we talked about milk butyrophilin before, and casein intolerance is the most common food intolerance that you'll see in children. It's associated with autism spectrum disorders, autoimmune uveitis, and celiac disease. It cross-reacts

with gliadin, cerebellar antibodies, and soy, and as I said before, up to 50 percent of celiac disease patients are intolerant of casein in dairy.



Traditionally used as a **sweetener** (“sorghum molasses” in the South)

Common ingredient in gluten-free **baked and processed goods**, and gluten-free beer

Does not commonly cross-react with **gliadin**

Does **cross-react** with corn, millet

This patient was also reacting to sorghum, which is traditionally used as a sweetener, like sorghum molasses in the South. It’s a common ingredient in gluten-free baked and processed goods, and also gluten-free beers are typically made with sorghum. It does not commonly cross-react with gliadin. It does cross-react with corn and millet.



Consumed as **whole grain**; also commonly found in gluten-free cereals, baked products, crackers, etc.

Associated with allergy, anti-thyroid effect, asthma, atopic dermatitis, respiratory disease

Cross reacts with sorghum, rice, gliadin

Millet is **goitrogenic**; patients with thyroid disease should be cautious

Speaking of millet, this patient was also producing antibodies to it. It's consumed normally as a whole grain, long history of consumption in countries like China. It's also commonly found in gluten-free cereals and baked products, crackers, et cetera. It's associated with allergy, it's been shown to have a goitrogenic or anti-thyroid effect, it's actually one of the strongest goitrogens. It's also associated with asthma, eczema, and respiratory disease. It cross-reacts with sorghum, rice, and gliadin. I just mentioned this, but I'll say it again: millet is goitrogenic, so it can reduce the uptake of iodine in the thyroid gland, and patients who have thyroid condition of some sort or iodine deficiency should be cautious eating millet.



Egg sensitivity more common in kids than adults; kids will often outgrow it

Cooked egg introduced at 4-6 months may protect against **allergy**

Associated with allergy/hypersensitivity

Some patients may **react** only to white, or only to yolk (run Cyrex 10 to find out; Array 4 tests combined white/yolk antigen)

Egg sensitivity is more common in kids than adults, although you'll see plenty of adults that have it. If you do see it in kids, it's possible or even likely that the child will outgrow it over time, and there are some studies that suggest that introducing cooked egg at somewhere between four to six months with infants may protect against intolerance or allergy. Intolerance to egg proteins is associated with allergy and hypersensitivity. Note that some patients may react only to the white or only to the yolk. On Cyrex Array 4 that we're talking about now, it's a combined white and yolk antigen, so you can't tell one or the other, but Cyrex Array 10, which we're going to discuss next, does separate the white and yolk antigen, so a patient who is only reacting to one or the other may still be able to eat the one that they're not reacting to.



Consumed as **whole grain** and as common ingredient in gluten-free foods

Also fermented to make **sake**

Associated with allergy/hypersensitivity, enterocolitis

Cross reacts with wheat, gliadin, corn/maize, soy, millet

This patient was also producing antibodies to rice. Of course, everyone knows about rice, it's consumed as a whole grain, but it's also a really common ingredient in gluten-free foods, and it's fermented to make sake. If you like going out for sushi, you need to keep that in mind if you're reacting to rice. Antibodies to rice are associated with allergy, hypersensitivity and enterocolitis, and it cross-reacts with wheat and gliadin, corn, soy, and millet.

All right, here's another test result, and as you can see, this patient is reacting to just about everything.

Casomorphin

Opioid peptide formed from undigested casein. Known to modulate the mucosa of the intestinal lining

If mucosa is damaged, casomorphin and other ingested peptides can more easily **penetrate the intestinal barrier**

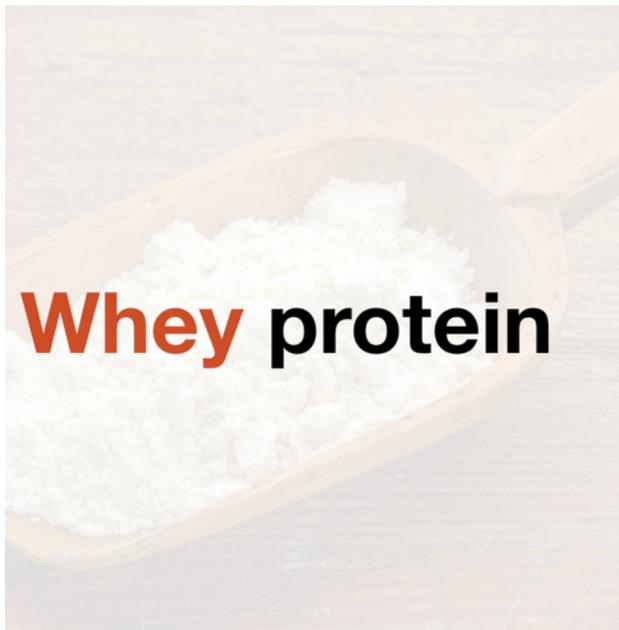
Capable of **disrupting the blood-brain barrier** and interfering with the neurotransmitter messaging system

Associated with SIDS, ASD, blood-brain barrier permeability, Down syndrome, post-partum psychosis

Cross reacts with cerebellar, gliadin

TEST	IN RANGE (Normal)	EQUIVOCAL*	OUT OF RANGE	REFERENCE (ELISA Index)
Array 4 – Gluten-Associated Cross-Reactive Foods and Foods Sensitivity **				
Rye, Barley, Spelt, Polish Wheat			1.59	0.4-1.4
Cow's Milk	0.89			0.1-1.3
Casein (Alpha & Beta)	0.92			0.1-1.7
Casomorphin			2.24	0.2-1.6
Milk Butyrophilin		1.58		0.2-1.8
Whey Protein			1.48	0.1-1.3
Chocolate (Milk)	0.97			0.1-1.4
Oats			1.21	0.2-1.0
Yeast			1.27	0.2-1.2
Coffee	1.37			0.3-1.9
Sesame	0.96			0.1-1.3
Buckwheat			2.20	0.4-1.3
Sorghum			1.24	0.3-1.2
Millet			1.89	0.3-1.5
Hemp			1.95	0.3-1.5
Amaranth			3.30	0.2-1.3
Quinoa			1.70	0.5-1.5
Tapioca			1.24	0.1-1.1
Teff			1.77	0.2-1.1
Soy	0.93			0.5-1.5
Egg			1.88	0.2-1.7
Corn	0.83			0.3-1.4
Rice		1.43		0.4-1.6
Potato			1.63	0.6-1.4

They've got out-of-range antibodies to most of the antigens on the panel, and then they've got a couple equivocal and only a few in the normal range. So let's talk about some of the antigens that this patient is reacting to that we haven't discussed yet. The first is casomorphin. So this is an opioid peptide formed from undigested casein. It's known to modulate the mucosa of the intestinal lining, so if the mucosa is damaged, casomorphin and other ingested proteins can more easily penetrate the intestinal barrier. Casomorphin may also be capable of disrupting the blood-brain barrier and interfering with the neurotransmitter messaging system. This may explain the association between casomorphin antibodies and SIDS, autism spectrum disorder, blood-brain barrier permeability, Down syndrome and postpartum psychosis. Casomorphin cross-reacts with cerebellar antibodies and gliadin.



Whey is the liquid remaining after **milk** has been curdled and strained

By-product of the manufacture of **cheese or casein** and is used in cheeses, protein supplements and processed foods

Associated with allergy/
hypersensitivity

Cross-reacts with gliadin

Dried whey contains lactose and should be avoided by patients with **lactose intolerance**

Whey protein: whey is the liquid that remains after milk has been curdled and strained. It's a byproduct of the manufacture of cheese or casein, and it's used in cheeses, protein supplements, and processed foods. Antibodies to whey are associated with allergy and hypersensitivity, they cross-react with gliadin, and it's important to note that dry whey contains lactose and should be avoided by patients with lactose intolerance. Even though it's not a lot of lactose, there is some in there, so if someone has a significant intolerance to lactose, they need to be careful of whey.



Used in **gluten-free** products
and as a source of **protein**

Also used as source of **PUFA**
(hemp oil)

Associated with allergy

Very little published **research**

Hemp: another food that's used in gluten-free products and also as a source of protein in a lot of vegetarian protein powders. It's a source of polyunsaturated fats, hemp oil, for example. So, antibodies to hemp are associated with allergy, and like teff there's very little published research on hemp so we don't know much about its reactivity relationship with gluten.