

Corn intolerance

These eight foods, and any ingredient that contains protein derived from one or more of them, are designated as “major food allergens” by the FDA (1, n.d.)

- Milk.
- Eggs.
- Fish (e.g., bass, flounder, cod)
- Crustacean shellfish (e.g. crab, lobster, shrimp)
- Tree nuts (e.g., almonds, walnuts, pecans)
- Peanuts.
- Wheat.
- Soybeans.

In addition, the FDA recognizes that persons may still be allergic to and have serious reactions to foods other than the eight foods identified by the law. So, always be sure to read the food label’s ingredient list carefully to avoid the food allergens in question.

One of these newly recognized in the last few years is Corn and corn products. Corn is one of the fastest growing food allergies in children, although one of the most unrecognized and underreported. The goal now is to highlight current research on corn and how it may be “hidden” in food, especially since corn is often consumed by those who must avoid wheat. Many families arrive at the diagnosis of “corn allergy” by accident, initially thinking that their child might be allergic to preservatives or additives found in food when their child is actually reacting to the corn ingredients, corn products, high fructose corn syrup etc. found in many food products. (2, n.d.)

The corn (maize) seed is called the kernel, which contains starch, protein, oil and other nutritionally valuable substances such as carbohydrate, protein, iron, vitamin B, and minerals. Corn oil contains polyunsaturated fatty acid and vitamin E. Corn allergy is a so-called IgE-mediated food allergy. IgE (Immunoglobulin E) is the allergy antibody. Allergy to corn is caused by proteins in the kernels. Only one of these proteins has firmly been established as an allergen involved in corn allergy. This protein is called the lipid transfer protein (LTP). LTP has first been identified as an important allergen in fruits. These include among others: peach, apricot, plum, kiwi, and mango. It is also present in corn (maize), nuts, various vegetables and in cereals.

LTP is an extremely stable protein. It is resistant to food processing, including heating, but also to gastrointestinal digestion. These properties make LTP a strong food allergen that can cause severe reactions. Other potential allergens in corn are storage proteins that have also been identified as allergens in other cereals like wheat. Some allergens in corn pollen are also present in the kernel. It is unlikely that these proteins play a role as allergens in food allergy to corn.

Many corn intolerant people can eat whole corn on or off the cob. However, they are all intolerant of processed corn products, which include high fructose corn syrup, corn syrup, corn starch, corn flour, corn meal, corn alcohol, and grits. This also means that they have to watch the hidden corn in products such as vanilla flavoring which often contains corn alcohol, baking powder which most brands have cornstarch in them, confectioners’ sugar which often contain cornstarch to prevent caking, etc. This includes corn fed beef.

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There are brands of all these without corn including grass fed beef such as Angus. In particular corn intolerant sufferers have watch prepared foods.

The plant fiber cellulose is the primary constituent of the bran coat of corn kernels. Like starch, cellulose consists of individual sugar molecules chemically linked together. However, the way in which sugar molecules in starch and cellulose bind together differs. Your digestive system produces enzymes that quickly and easily break down the chemical bonds in starch, releasing sugar molecules that pass into your bloodstream. These digestive enzymes, however, cannot break the chemical bonds between the sugar molecules in cellulose. Therefore, the bran coat of corn kernels passes through your intestines intact.

Processed corn contains protein, sugar, starch and fat, all of which are digested in your gastrointestinal tract and absorbed into your bloodstream.

Not all sugars are the same. **Sugar** is a class of sweet substances that are composed of carbon, hydrogen and oxygen. Simple sugars are called monosaccharides and include glucose, fructose and galactose. The cane or granulated sugar is sucrose, a disaccharide. Other disaccharides include maltose and lactose (**Lactose** is formed from galactose and glucose). High fructose corn syrup (HFCS) is mixture of usually 55 percent fructose and 45 percent glucose and is metabolized in your liver. No one should consume high fructose corn syrup

When you have prolonged ingestion of HFCS, you may be promoting your liver to dump more lipids, like cholesterol and triglycerides, into your bloodstream, putting you at an increased risk of metabolic syndrome, a cluster of health problems associated with obesity and type 2 diabetes and heart disease and activating leptin that tells body that is full or satisfied. (3, n.d.)

The typical American diet has 35 percent extra unnecessary calories, in large part due to sugary foods and soft drinks that could be eliminated. Women should eat no more than 100 calories per day from added sugar of any kind; men, 150. That's roughly 6 to 9 teaspoons.

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List of products to avoid if possible (4, n.d.)

* When you first learn of having a Corn Allergy, it does not seem like it will be that difficult to manage. You know to avoid corn, corn syrup, corn flour, corn starch, grits, corn meal, popcorn etc. If you avoid these in home cooking you should be good, right. It seems simple actually. As it turns out, there are a few hundred ingredients that fall under the classification is, or can be, derived from corn. Most of these are found in prepared foods. One in particular is Maltodextrin. This is found in some "potato" chips and crackers. Another hidden source is some cans of fruits and vegetables s are lined with of corn starch to prevent sticking. It is not an "ingredient" therefore not listed.

This information is not to scare you, but to help you be an informed consumer, and hopefully help you avoid those annoying corn based ingredients

Not included on the list is **Beef**. Most USDA Supermarket Beef is corn fed and corn finished. Some corn allergic people cannot eat this beef without the usual corn allergy symptoms. Most Angus Beef is grass fed but may be corn finished. This beef usually alright.

Grass fed beef is raised on grass AND finished only with grass. Most if not all corn allergic suffers can eat grass fed beef with no problems

* Now let's review the usual suspects:

- Ascorbic Acid (Vitamin C) Baking Powder (corn starch)
- Brown Sugar – look for use of Caramel color. Domino's Brown sugar no longer uses Caramel color
- Calcium Citrate - the **calcium salt of citric acid**. See Citrate below for details.
- Caramel – coloring used in soft drinks, **derived from corn** "or cane sugar." The "or" in Coca-Cola's explanation refers to temporary change to make the ingredients **Kosher for Passover**. The rest of the year, it is from corn.
- Cellulose, Vegetable, Powered, etc.
- Citrate - can refer either to the conjugate base of citric acid, or to the esters of citric acid. An example of the former, a salt is trisodium citrate? an ester is triethyl citrate. Forms of Citrate include: Calcium Citrate, Magnesium Citrate, Potassium Citrate, Sodium Citrate, and more.
- Citric Acid - the **source sugar** is corn steep liquor along with hydrolyzed corn starch
- Corn
- Corn Meal – items baked sitting on Corn Meal such as Bagels, Breads or Pizza, may not list Corn Meal as an ingredient
- Corn Starch – in most over the counter medicines that come in a dry pill form. Yes, this includes Benedryl too. Watch for Corn Syrup in the liquid forms.
- Corn Syrup
- Decyl Glucoside - used in personal care products such as shampoo. **It is produced by the reaction of glucose from corn starch** with the fatty alcohol decanol which is derived from coconut.
- Dextrin, Maltodextrin – thickening agents found in sauces (check those frozen veggies!) salad dressings, and ice cream
- Dextrose (glucose) – corn sugar, found in cookies, ice cream, and paired with glucose in hospital IVs unless specified not to! Can also be used as a carrier with anesthetic shots such as Lidocaine and **Novocaine!** Dextrose is also injected into meat, lunch meats and deli cuts. Be wary of "honey baked" items, the sweet flavor may not be from honey.
- Ethanol - made by fermenting sugars produced **from corn starch**.

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- Ferrous Gluconate - i.e. as found in canned olives, and **comes from corn or potato acid**.
- Flavoring - Artificial or "Natural Flavors" - as defined by the **FDA regulations of labeling of spices, flavorings, and colorings**.
- Golden Syrup - Sometimes recommended as an alternate to Corn Syrup, but it may contain Corn Syrup as well.
- Honey - May contain corn syrup, as HFCS is sometimes fed to bees, resulting in **corn in the honey produced**.
- Hydrolyzed Vegetable Protein (HVP)
- Iodized Salt – **Morton's** FAQ explains why they add Dextrose (corn) to their salt.
- Lactic Acid - Commercially, lactic acid can be made synthetically from chemicals or organically as a byproduct of corn fermentation.
- Lauryl Glucoside - is a surfactant used in cosmetics. It is a glycoside produced from **glucose** and lauryl alcohol.
- Magnesium Citrate - Magnesium salt of **citric acid**.
- Magnesium Stearate
- Malic Acid Malt
- Malt Flavoring
- Maltitol - (also known as Maltisorb and Maltisweet) Commercially, maltitol is a disaccharide **produced by Corn Products Specialty Ingredients** (formerly SPI Polyols), Cargill, Roquette, and Towa, among other companies. Maltitol is made by hydrogenation of maltose obtained from starch.
- Maltodextrin Maltose
- Mannitol - A naturally occurring alcohol that is often combined with corn derived sugars. Here is the link on **USDA's website** explaining this practice.
- Methyl Gluceth - an emollient used in cosmetics manufactured from corn sugar and corn starch.
- Modified Food Starch
- Monosodium Glutamate (MSG) - The **MSGMyth** site explains MSG is made from corn.
- Polydextrose - is **synthesized from dextrose, and contains sorbitol and citric acid**. It is a food ingredient classified as soluble fiber and is frequently used increase the non-dietary fiber content of food, replace sugar, reduce calories and reduce fat content. Note: Dextrose, Sorbitol, and Citric Acid are all on this list of ingredients derived from corn.
- Polylactic Acid (PLA) - **Plastic made from corn starch (U.S.)** or sugarcane.
- Polysorbates (i.e. Polysorbate 80) - **Polysorbates** are oily liquids derived from PEG-ylated sorbitan (a derivative of sorbitol) esterified with fatty acids.
- Potassium Citrate - See Citrate above for details. Powdered Sugar - contains corn starch
- Saccharin – in powder form IS Sweet'N Low and therefore contains Dextrose.
- Sodium Citrate - See Citrate above for details.
- Sodium Erythorbate - is **produced from sugars derived from sources such as beets, sugar cane and corn**. It is a food additive used predominantly in meats, poultry, and soft drinks.
- Sodium Starch Glycolate - is the **sodium salt of a carboxymethyl ether of starch**. It can be derived from any starch source (rice, corn, potatoes, etc).
- Sorbitan - is a mixture of chemical compounds **derived from the dehydration of sorbitol**.
- Sorbitan Monostearate - an ester of sorbitol and stearic acid. You will see this ingredient used in Yeast (and possibly other places as well).
- Sorbitol – You will find **Sorbitol** in Sugar Free items such as candy, chewing gum, cosmetics, mouth wash, and toothpaste
- Starch – often this is corn starch unless it specifies something else, like potato starch
- Sucralose - Sucralose by itself may be corn free, though it is likely one best to avoid. Repackaged as

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the brand **Splenda**, it will contain dextrose and/or maltodextrin.

- Sweet'N Low – contains **Dextrose**, and according to **Sweet'N Low**, ALL sugar substitutes in powder form contain Dextrose.
- Tocopherol (Vitamin E)
- Vanilla Extract – most brands will have corn syrup, though you can find organic brands that do not, though the alcohol may be corn derived.
- Vinegar, Distilled White - can be made from any sugar, but **the most common method is to use corn** that has been converted from starch into sugar. In Europe is distilled from Malt.
- Vitamins - Vitamin C (Ascorbic Acid) and Vitamin E (Tocopherols). Use caution with products that are "enriched" with added vitamins. The vitamins may be corn derived, or corn derivatives may be used in the binding (if solid) or suspension (if liquid) of the vitamin compound.
- Xanthan Gum - a food additive that is used as a thickening agent. It is found in sauces, spices, and commonly in Gluten Free foods. Xanthan Gum is most often grown on corn, or corn sugars. If an item includes Xanthan Gum and does not state it is corn free, call the manufacturing company and inquire as to the source of Xanthan Gum to be sure. Red Mill Xanthan Gum is corn free. Hodgson Mills is not.
- Xylitol - You will find **Xylitol** in Sugar Free items such as candy, chewing gum, cosmetics, mouth wash, and toothpaste
- Zein – used in time-release medications, derived from Maize

Bibliography

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