

20 Alternative Flours You Should Know

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STORY AT-A-GLANCE

- › If you have celiac disease, a gluten intolerance or have chosen to go gluten-free for other reasons, you will need to identify healthy alternative (non-wheat) flours
- › Avoid corn flour and soy flour, as they are often produced from genetically engineered crops
- › The eight alternative flours I recommend are: almond, amaranth, arrowroot, coconut, hemp, millet, sorghum and tapioca; you may also enjoy healthy “flours” produced from riced cauliflower and ground macadamia nuts
- › While 12 of the alternative flours are thought to be good for you based on the nutrients they contain, I discourage their use due to the presence of lectins, sugar-binding plant proteins that attach to your cell membranes, promoting weight gain and ill health
- › Some of the alternative flours you should avoid due to their lectin content are barley, buckwheat, chia, chickpea, lupin, oat, potato, quinoa, rice, rye, spelt and teff

If you are still baking primarily with whole wheat flour because you believe it is better for your health, you may not be aware of the many alternative flours that exist. While some are worth checking out, there are others that are best avoided altogether, such as corn flour and soy flour, which did not make the list as they are often produced from genetically engineered crops.

Many of the 20 alternative flours highlighted below are gluten-free. If you have celiac disease, a gluten intolerance or have chosen to go gluten-free for other reasons, you are

very likely familiar with some of them. Gluten, by the way, is a protein made of glutenin and gliadin molecules that forms an elastic bond in the presence of water, thereby holding bread and cakes together and giving them a spongier texture.

Gluten is a concern because it interferes with your body's ability to break down and absorb nutrients from food. Gluten contributes to the formation of a glue-like, constipating lump in your gut that can interfere with proper digestion.

Undigested gluten prompts your immune system to attack your villi, the fingerlike projections lining your small intestine, resulting in side effects such as abdominal pain, diarrhea, constipation or nausea. Gluten consumption can also predispose you to increased inflammation, nutrient malabsorption and deficiencies and other health problems.

Six Healthy Alternative Flours

The six flours shown directly below are, in my opinion, the healthiest of the 20 alternative flours addressed in this article. They are low in lectins and lower in the omega-6 fat linoleic acid (LA). Rice and coconut flour are two of the lowest in LA.

Each is gluten- and wheat-free. Two of my personal favorites are almond and coconut flour. Again, you will need to experiment a bit to figure out which types of flours work best with your recipes. When in doubt, start with smaller amounts of each type of flour and adjust from there.

Amaranth^{1,2} — Amaranth flour is a gluten-free, wheat-free flour produced by grinding the seeds of the amaranth plant into a fine powder. Not only does amaranth flour contain all nine essential amino acids, but it is also a good source of calcium, iron, magnesium and phosphorus. While technically not a grain, amaranth flour is grain-like and is described as having an earthy, nutty taste.

Because it is a dense flour, you will achieve better results when blending amaranth with other flours. Start with 25% amaranth and adjust from there. It does best in

pancakes and quick breads and can also be used to thicken roux, soups, stews and white sauces.

Arrowroot^{3,4} — Derived from the root of the plant of the same name, arrowroot flour (also known as arrowroot starch) is a tasteless, odorless powder useful as a thickening agent. It is far superior to cornstarch, which is often genetically engineered. It also can be used as a breading for fish and meats or blended with other gluten-free/wheat-free flours to make baked goods.

Arrowroot contains a good amount of B vitamins, iron and potassium, but no protein, which gives it superior thickening power. As such, it is often used in confections because it creates a perfectly clear gel that can stand up to acidic ingredients and freezing. Accordingly, it is often used to thicken fruit gels and fruit sauces, including cranberry sauce and sweet and sour sauce.

Coconut^{5,6} — Coconut flour consists of the dried meat of fresh coconuts after they've been pressed to make [coconut milk](#) and most of the oil has been extracted. When used as a replacement for conventional flour, it adds a mild coconut flavor while imparting a rich texture and natural sweetness.

Coconut flour is nutritious, in part, because it boasts the highest percentage (48%) of dietary fiber of any flour. It's also a good source of protein, while being very low in carbohydrates. And, it's naturally gluten- and wheat-free.

You can turn standard baked goods into delicious gluten-free, low-carb paleo treats by replacing the wheat flour with coconut flour and adding eggs. On average, add one egg for every ounce of coconut flour used — this will help the ingredients hold together when baked. Also, because it is very dense, you will need to slightly increase the liquids in recipes involving coconut flour.

As a general rule of thumb, you can replace one-fifth of the flour in a recipe with coconut flour without compromising the taste or texture of the finished product. For a delicious breakfast treat, check out my recipe for [coconut flour almond meal pancakes](#).

Hemp⁷ — Hemp flour (also known as hemp powder) is produced by milling and sifting hemp seeds after they are crushed to extract the oil. Hemp flour is gluten- and wheat-free and adds a mild, nutty flavor to baked goods. It is about 33% protein, making it a great source of amino acids. It is high in fiber, iron, magnesium and zinc.

This dense flour does best when combined with other alternative flours for baking. Limiting hemp powder to 25% of your flour blend will ensure a lighter texture, especially when baking bread. Due to its oily nature, hemp powder will go rancid unless it is refrigerated.

Millet^{8,9,10} — Millet is an ancient, drought-resistant grain — part of the grass family — grown widely in China, India and countries surrounding the Sahara Desert in western Africa. It has a protein structure similar to wheat, but is gluten- and wheat-free. It boasts a sweet, buttery, cornmeal-like flavor.

Millet is a good source of B vitamins and offers a decent amount of copper, manganese, magnesium, potassium and zinc. That said, millet also contains goitrogens, dietary substances known to impair your thyroid and iodine metabolism. In countries in which millet is consumed as a staple, the development of goiter is common.^{11,12} As such, you'll want to moderate your intake.

Sorghum^{13,14} — Sorghum flour, which is both gluten- and wheat-free, is ground from the grain of the same name. It is an important dietary staple for some 9 million people worldwide, and is used often in Africa and India to make porridge and flat, unleavened breads. The Ethiopian flatbread called injera and a particular type of Indian roti are both made with sorghum.

Sorghum flour is a good source of antioxidants, B vitamins, fiber, iron phosphorus and protein. It has a mild, slightly sweet taste, which makes it a good addition to flour blends. It does not work well in cup-for-cup substitutions with regular flour.

Two additional "flours" I want to bring to your attention are those derived from cauliflower and macadamia nuts. To me, "cauli-flour" is simply riced cauliflower that can be spiced up to make a tasty flatbread or pizza crust. You can rice cauliflower by placing pieces of raw, washed cauliflower in your food processor and blending it until it is reduced to tiny, rice-sized pieces.

If you like cauliflower, check out these delicious recipes for [nutritious golden cauliflower flatbread](#) and [cauliflower pizza crust](#). By using cauliflower instead of grain flours in these recipes, you replace starchy carbohydrates with whole-food nutrition and cut calories, while satisfying your craving for bread.

Similar to almond flour, macadamia flour is produced by using your food processor to transform whole, raw macadamia nuts into a fine powder. Macadamia flour has a sweet, nutty taste and is a healthy gluten-free, low-carb option. Macadamia flour is lower in both carbs and protein than almond flour. For a new taste twist, you can substitute macadamia flour into recipes calling for almond flour, including the coconut-almond pancake recipe mentioned above.

12 Flours to Avoid if You Want to Minimize Harmful Lectins

The 12 flours highlighted below are often touted as healthy alternatives to wheat, especially when it comes to gluten-free diets, whether it be celiac disease or simply a matter of personal preference. While some of these alternative flours are considered nutritious solely based on the amount of fiber, protein, vitamins and minerals they contain, their health benefits may be overshadowed by the presence of harmful plant lectins.

Lectins are sugar-binding plant proteins that attach to your cell membranes and can be a hidden source of weight gain and ill health, even if you eat an otherwise healthy diet. Many lectins are proinflammatory, immunotoxic, neurotoxic and cytotoxic.

Certain lectins may also increase blood viscosity, interfere with gene expression and disrupt endocrine function. Because the following flours are high in lectins, I

recommend you use them sparingly or avoid them entirely, especially if you have an autoimmune disease.

Barley¹⁵ — Barley flour is made from milled whole grain barley that's had its outer husk removed. This wheat-free flour contains some gluten and has a slightly sweet, nutty flavor. Barley flour is rich in fiber. Similar to oat flour (discussed later), it contains high amounts of soluble fiber composed of indigestible sugars called beta-glucans, which have been shown to lower your blood pressure.

For best results, use barley flour in a blend with other flours, and limit it to about 25% of the overall mix. It can also be used to thicken or flavor soups or stews.

Buckwheat^{16,17} — Despite its name, buckwheat (also known as kasha when its toasted) flour is not a form of wheat, but actually a relative of rhubarb. Because it is ground from seeds, buckwheat flour is both gluten- and grain-free. Due to its strong nutty taste, which can be overpowering and somewhat bitter, buckwheat flour should not stand alone in a recipe.

Buckwheat, which is a good source of calcium, fiber and protein, is a very fine flour and can be used as a substitute for cornstarch in gluten-free bread recipes. Buckwheat is a low-glycemic carbohydrate offering better satiety than wheat bread, so you'll feel fuller longer. You can replace regular flour with buckwheat flour cup-for-cup. It is said to make excellent waffles and pancakes, including Russian blinis, as well as French buckwheat crepes.

Chia^{18,19} — Chia flour is produced from ground chia seeds and is touted as a superfood because it is a source of concentrated energy and nutrition. Chia flour boasts a high calcium, fiber, omega-3 and protein content. When baking with chia flour, you will need to increase the amount of liquids and cooking time to achieve the best results. Chia flour is gluten- and wheat-free.

Chickpea^{20,21} — Also known as **garbanzo bean** flour, chickpea flour possesses a distinctive, slightly nutty taste that does not do well on its own. When substituting it

for conventional flours, use very small amounts in combination with other gluten- and wheat-free flours, otherwise its distinctive taste may dominate. Chickpea flour is high in fiber, folate, manganese and protein.

Lupin^{22,23} — Lupin flour is derived from the "sweet lupin" legume that is in the same family as peanuts and soybeans. As such, this gluten- and wheat-free flour is high in fiber and protein and low in fat. The major caution about lupin flour is the possibility it may be life-threatening if you have a peanut or soybean allergy. Similar to other gluten-free grains, lupin does best when included in a flour blend.

Oat^{24,25} — Oat flour is made from ground oats, which can be concerning if you have celiac disease since oats are often contaminated with wheat. Even if you avoid wheat, you still need to contend with avenin, a protein in oats that is similar to gluten and therefore can have negative effects on celiac sufferers.

Oat flour is often thought to be a healthy choice because it contains high amounts of soluble fiber comprised of indigestible sugars called beta-glucans, shown to lower your blood pressure. Oat flour is well suited for baking, but absorbs liquids, so plan to increase liquid ingredients when using it. Oat flour goes rancid quickly, so store it in your refrigerator or freezer, or make small batches using a food processor.

Potato²⁶ — Potato flour and potato starch, both of which are gluten- and wheat-free, are often confused. Potato flour possesses a very strong **potato** flavor, as well as the heaviness of potato. For these reasons, a little goes a long way in a recipe. It also has a short shelf life, so buy it only when you plan to use it.

Potato starch, on the other hand, has a light potato flavor and a consistency similar to cornstarch or tapioca. It has a longer shelf life, is a good thickener and has a taste virtually undetectable in recipes. If you are a diabetic or prediabetic, potato starch is one of the digestive-resistant starches recommended for diabetics. Both the flour and the starch cannot stand alone in recipes, and will do better when blended with other gluten-free flours.

Quinoa²⁷ — Quinoa flour is produced from milled quinoa seeds. This ancient grain with a nutty flavor is both gluten- and wheat-free. It is recognized for its high amounts of lysine and isoleucine that enable it to be a complete protein source. It is one of the few plant foods containing all nine essential amino acids.

As a whole grain or flour, quinoa is particularly rich in two flavonoids, kaempferol and quercetin, which have antioxidant properties. Quinoa flour tends to dry out baked goods when used in large amounts. For that reason, it is best to use only small amounts of this flour in sweets such as muffins and quick breads.

Rice^{28,29} — Both brown and white rice flour are gluten- and wheat-free. Brown rice flour is the heavier, grainier of the two. While it has a higher nutritional content than its white cousin, brown rice flour can be a bit grainy and heavy in some recipes. Similar to potato and tapioca, brown rice flour is one of the digestive-resistant starches recommended if you are a diabetic or prediabetic.

Brown rice flour has a slightly nutty flavor, whereas white rice flour is quite bland. Given that white rice flour is milled from polished white rice, it has very little nutritional value. Its strength is in the light texture it imparts, making it ideal in recipes such as dumplings and pizza crust.

Keep in mind that rice contains chitin-binding lectins, which are similar to wheat lectin. Because chitins are long polymers of n-acetyl-glucosamine, the primary binding target of wheat lectin, wheat lectin and chitin-binding lectin are functionally identical. Given this reality, in my opinion, a grain-free diet often yields far superior health benefits as compared to a diet focused solely on eliminating wheat- and gluten-containing grains.

Rye^{30,31} — Rye flour is a dark flour that possesses a distinctive flavor. It is wheat-free and has a low gluten content. Breads made with rye flour tend to be denser than those made with wheat. When milled, rye flour retains the germ, endosperm and bran, making it more nutritious than refined wheat flour. Rye flour is a good source of B vitamins, iron, magnesium, phosphorus and zinc, as well as fiber and protein.

When used in baking, rye flour, due to its lower gluten content than wheat flour, is less elastic and therefore produces bread that is less airy. Rye dough also contains more free sugars than wheat, so it ferments faster.³²

Spelt^{33,34} — Spelt flour results from the milling of an ancient grain of the same name. Spelt flour contains a low amount of gluten, but is not entirely gluten-free. It is a good source of B vitamins, manganese, magnesium, phosphorus and zinc, and rich in fiber and protein. Spelt tends to absorb more moisture than wheat flour, so you will want to reduce liquids by 25% when substituting it.

When using spelt flour to make bread, take care to knead it lightly otherwise it will become dense. Spelt flour produces a bread similar in color to light rye, with a slightly sweet and nutty flavor. Some varieties of crackers and pretzels are made with spelt flour.

Teff^{35,36} — Teff flour is made from milled teff, a tiny cereal grain originating from northern Africa. Teff flour is a primary ingredient in the spongy, slightly-sour flatbread called injera that is eaten daily in countries such as Eritrea and Ethiopia.

It is both gluten- and wheat-free, with a mild, nutty flavor. Teff is an excellent source of amino acids, and is high in calcium, iron and protein. Much of its fiber is a type known as resistant starch, which has been linked to health benefits such as improved blood sugar and weight management.

Final Thoughts About Alternative Flours

Using alternative flours will require patience and can be quite a challenge. If you are living a gluten-free lifestyle — either due to celiac disease, a gluten or wheat intolerance or simply as a matter of personal preference — you will need to do some experimenting to achieve your desired outcomes. The struggles and rewards of gluten-free baking come in blending several flours, adding eggs and adjusting liquids.

The biggest adjustment, however, will be in your expectations for the finished product. No matter how many techniques and tricks you use, it is virtually impossible to replicate the elasticity of gluten in most baked goods, particularly in yeast breads. In time, however, you'll acquire a taste for denser, flatter treats made with one or more of the healthy alternative flours.

As you make a conscious choice to eat less wheat-containing foods, or perhaps to avoid wheat altogether, mainly because it is an inflammatory food, you'll be happier and healthier. I would say the same for the alternative flours containing lectins – it's better to avoid them or moderate your use.

Sources and References

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