



Ingredient Treasury for Gluten-Free Baking

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How do you begin baking gluten-free?

Before taking the plunge into the basics of gluten-free baking, you'll need four things: an open mind for learning new methods, a flexible palate for trying new tastes and textures, an adventurous spirit, and a bit of patience. These traits will serve you well from the start, because gluten-free baking is a 180 degree turn from traditional baking. Starting out with a mindset that accepts a different approach will help you enjoy this new journey of tastes and methods as well as help prevent occasional bouts of discouragement or outright disappointment along the way.

Whether you prefer baking from scratch, a packaged mix, or a combination of both, gluten-free baking requires three major paradigm shifts in your thinking about baking:

Paradigm Shift #1: Using single all-purpose flour for each of your baking needs is replaced by using a "flour blend" that combines two or more different gluten-free flours that work in harmony with each other to replicate the wheat-flour effect in baking.

Paradigm Shift #2: Most gluten-free breads are made from batters similar to cake batters. They are mixed with spoons or paddles and are baked in loaf pans with walls.

Paradigm Shift #3: Gluten gives flexibility to dough and helps bind it together. Gluten-free baking requires key ingredients that replace the gluten to help give structure to the dough; otherwise, the baked goods will fall apart.

What ingredients are commonly used in gluten-free baking?

While traditional baking revolves around wheat flour, successful gluten-free baking utilizes a variety of different flours blended in various combinations. Rice flour is a

foundational ingredient in the majority of gluten-free baked goods. The flours made from rice include white rice flour, sweet white rice flour, and brown rice flour. However, rice flour is rarely used alone as a substitute for wheat flour. It's common to find that flour blends combine one or more varieties of rice flour with other "white" flours, typically potato flour and tapioca starch. These ingredients create a blend that helps replace all-purpose wheat flour.

You'll find these flours used in different ratios in both recipes and packaged products. It's nice to have these individual flours on hand in your kitchen. However, you will also find other flours widely used in combination with rice flour, including sorghum flour, soy flour, bean flours and lesser known flours with wonderful baking powers made from nutritious grains including amaranth, buckwheat, quinoa and teff.

In addition to the flours and starches of gluten-free baking, Xanthan Gum and Guar Gum are regularly used to help replace the extensibility of gluten and provide the binding structure in a gluten-free baked good. When dampened, these gums provide viscosity and binding properties for blending the flours together and making a gluten-free dough or batter.

What are the different gluten-free flours and starches?

Gluten-free flours come from a variety of sources including rice, other grains, nuts, seeds, and beans. They vary in color, taste, texture, and levels of protein, fiber and other nutrients, as well as culinary and baking performance characteristics. Many of these flours come in organic versions also. Some flours are also referred to as a "meal," which have a coarser ground texture with higher moisture content than flour.

Gluten-free flours are usually found in natural food stores both large and small, online malls, individual product manufacturers, and Asian food markets. Also, starches provide essential properties and work well in combination with flours, but are not used by themselves as a substitute for flour in baking

Flours

Almond Meal/Flour:

Made from raw almonds that have been blanched, this nutty flour is packed with protein and flavor. Particularly well suited for making sweet delights such as cakes, cookies, sweet breads, and an array of desserts.

Amaranth Flour:

Ground from the hearty, nutritious South American grain amaranth, this flour boasts of a nice protein content and is recommended to be used with other gluten-free flours and starches for baking breads.

Black Bean Flour:

This robust flour lends itself well for culinary uses that have Mexican and South American influence as well as vegetarian concoctions.

Brown Rice Flour:

Look for brown rice flour with a fine grind to avoid grittiness. Best used in conjunction with other gluten-free flours for baking.

Buckwheat Flour:

Known for its unique flavor that gives buckwheat pancakes a signature flavor, this flour is particularly high in protein and works well as a complementary flour for baking.

Chestnut Flour:

For sumptuous gluten-free pastries, Italian chestnut flour is a delightful flour with a particularly sweet and nutty flavor. The Italian cake, Castagnaccio, uses this flour exclusively.

Coconut Flour:

This sweet, nutritious flour is high in fiber and is a good source of protein. Enhances baked goods with a rich texture and imparts a distinguishable coco-nutty flavor.

Fava Bean Flour:

Fava beans, a part of the pea family, are found in Mediterranean and Chinese cuisine. Finely ground flour from the fava can be a unique addition for gluten-free cooking and baking.

Flaxseed Meal:

Known for being high in Omega 3 Fatty Acids and fiber, flaxseed meal is a favorable option for adding nutrition to gluten-free baked goods. Use in small amounts. A little goes a long way.

Garbanzo Bean Flour:

The garbanzo bean is widely featured throughout Middle Eastern cuisine and is often found in gluten-free flour blends as a complementary flour.

Green Pea Flour:

A nice option for culinary uses such as thickening a creamy pea soup. This can also be a nice addition to incorporate into gluten-free baked goods as a complementary flour.

Hazelnut Meal/Flour:

This nutritious flour made from freshly ground hazelnuts has a sweet, nutty flavor and is well suited for using in sweet baked goods, similar to how almond flour would be used.

Indian Ricegrass/ Montina™:

Particularly high in fiber, this is a robust flour that is used in combination with other flours or as a flavorful, nutritious supplement for gluten-free baking. Once an important staple to the Native American diet, Indian ricegrass has made a comeback via the growing gluten-free food industry.

Mesquite Flour:

Made from succulent bean pods of the mesquite tree, this particularly sweet, richly-colored flour is known for its nutrient-density and low-glycemic index. Brings a distinctive flavor to baked goods when used in small quantities.

Millet Flour:

Yellow in color and subtle in flavor, millet flour is a versatile flour for gluten-free baking and is used in conjunction with other gluten-free flours to not only boost nutrition and flavor but also adds beautiful color.

Millet Meal:

Heartier in texture than millet flour, the meal can enhance texture and flavor for gluten-free whole grain breads.

Potato Flour:

Unlike potato starch, potato flour is a highly transitional flour suitable for baking and cooking. A foundational ingredient in gluten-free flour blends and great for thickening gravies, soups, and sauces.

Quinoa Flour:

This nutritious flour, similar to amaranth flour, plays a leading role among gluten-free baked goods because of its favorable protein properties and for mimicking the "gluten" factor. Can be used as a full-replacement for wheat flour depending on the recipe but is typically best when used in combination with other gluten-free flours for baking.

White Rice Flour:

Widely used in conjunction with potato flour and tapioca flour, this flour was a pioneering ingredient in gluten-free baking and is still widely used in a multitude of gluten-free goods including Asian noodles.

Sweet White Rice Flour:

Sticky by nature, this flour is glutinous in texture and is prized for enhancing the binding qualities of gluten-free baked goods when used in conjunction with other gluten-free flours.

Sweet White Sorghum Flour:

Known for having properties closest to wheat flour, sorghum flour is particularly favored for its high protein content that helps give baked goods their structure and imparts great flavor. Used in combination with other gluten-free flours, sorghum, also known as milo, is becoming a leading ingredient in gluten-free baking.

Soy Flour:

High in protein, soy flour is often found in gluten-free flour blends for baking despite the strong flavor it imparts. Not recommended to be used by itself as a replacement for wheat flour.

Tapioca Flour:

Made from the South American tuber root manioc (or also known as cassava or yucca), tapioca flour is a staple ingredient in gluten-free baking. Neutral in flavor and not particularly nutritious by itself, this flour shines as an ingredient to help add chewiness to baked goods. Used in the delicious South American cheese bread rolls, Pao de Quejo.

Teff Flour:

Made from the smallest grain in the world native to northern Africa, teff is a high-protein flour with a unique flavor. Can be used in combination with other gluten-free flours in baking to help give structure to baked goods such as cookies and breads.

White Bean Flour:

This nutritious, low-glycemic flour is a versatile culinary ingredient for thickening soups and sauces. Also shines in its ability to bring a lift to gluten-free baked goods when used in conjunction with other flours.

Starches

Arrowroot Starch:

Used primarily as a thickener, the flavor of arrowroot starch is completely neutral and it will not impart an "off" flavor to your recipes. Becomes translucent when cooked and for this reason it can be great for dessert sauces because of its beautiful glossy appearance. But beware. The starch can make your meat sauce have a gluey, fake appearance.

Cornstarch:

Valued for its thickening properties, cornstarch is widely found in creamy products like puddings and soups. To avoid clumping, the starch is often combined with liquid such as water, shaken to create a slurry, and then added to the food to thicken.

Potato Starch:

Not used alone, this starch is favored for its ability to bring moistness to gluten-free baked goods. Also, it is a suitable replacement for wheat flour in thickening gravies, sauces, soups, and stews.

Can you use just rice flour as a replacement for wheat flour?

When first learning how to bake with gluten-free flours, rice flour is a trusty, reliable ingredient, but using just rice flour is rather elementary when turning traditional baking recipes into gluten-free versions. If anything, it's a short-term quick fix to satisfy the cravings when desperation kicks in. But chances are you won't use rice flour by itself for long. However, keep in mind that there are benefits of using only rice flour.

You will soon discover the properties of rice flour and how your baked goods will react and you will likely not be all that pleased. Rice flour does not have the protein content and extensibility characteristics of wheat flour with gluten, and you'll quickly find that your chocolate-chip cookies look flat and crumble in your hands after baking. However, don't consider starting out by baking only with rice flour a waste of time. You'll learn what makes traditional baking different from gluten-free baking, and you'll discover what rice flour can and can't do. As you become more accustomed to the needs of your diet, you'll be able to experiment with different gluten-free flours and blends to find a taste, performance quality, and consistency you like.

What is a gluten-free flour blend?

[a]Saying good-bye to all-purpose wheat flour means entering the world of gluten-free flour blends. Flour is of course elemental to baking, but unlike traditional baking,

gluten-free baking does not utilize just one flour. Rather, different flours are used together to achieve better results than what one gluten-free flour can do alone.

A gluten-free flour blend is a combination of two or more gluten-free flours in varying ratios depending upon the purpose you want to achieve. While a gluten-free flour blend can be created that replaces all-purpose wheat flour cup-for-cup, it's more common to experiment with different flours and ratios until you find a unique blend that works in a particular recipe.

Not all gluten-free flour blends are created equal—every gluten-free flour or starch has its own set of characteristics and culinary powers. Some flours are higher in protein and fiber, while some have strong flavors or coarser textures. One gluten-free flour blend may work great for a bread and muffin but not so well for another baking and cooking purpose. In fact, different flour blends are often created specifically for the product or recipe in mind. Some flours are used to build structure, and add protein and nutrients, while other flours are used to add a characteristic like improved browning or chewiness.

Most product manufacturers have their own proprietary blends, and cookbook authors typically vary in what they think is the ultimate flour blend. When experimenting, try cookbook authors' recommendations, then consider making your own tweaks by adding or subtracting ingredients and adjusting ratios to discover what works best for your particular recipes. Working with flour blends in gluten-free baking is both an art and science where constant experimentation is commonplace among expert chefs, cookbook authors, and home chefs alike.

What are some good flour blend formulas for wheat flour substitution?

Answers abound! But to recommend only a couple flour blends when there are a wide variety of quality options to choose from would be like having you test drive only two cars at the dealership among dozens of exceptional models. Your experience would be limited. So, embrace a journey of gluten-free flour blend discovery--your own!

To begin experimenting with wheat flour substitutions at home, consult gluten-free cookbooks for an array of different gluten-free flour blends. You'll find many variations that are different from one another and many that are similar. You will often find white rice flour, tapioca flour, and potato starch in a blend, while others will capitalize on other flour combinations, some of which feature the rising star sorghum flour. Even quinoa flour, amaranth flour, sweet white rice flour, soy flour, and teff flour are being used in flour blends.

The flour blends you'll find in cookbooks have been tested and approved by the cookbook authors in their recipes, but don't be bashful in tweaking their ratios and flours to find the formula that suits your recipe needs best. Ask members of your local gluten-free support group about what blends they like and have found successful. Browse the Internet for options. If you like to bake from scratch, take on the search of a flour blend you will use regularly with a sense of adventure. Try many and have fun! Also, use the flour combinations you discover as guidelines for creating your own signature all-purpose flour blend. Consider making the flour

blends in big batches so that they are at the ready for many of your baking needs. Store them well and use as you would use all-purpose flour.

Reality check: Remember that not all gluten-free recipes are created equal. While one flour blend will work well for one recipe another flour blend will not work as well for the same recipe. You've left the world of using just one flour (general all-purpose wheat flour) and have entered the realm of one size does not fit all. The gluten-free flour blend is like architecture, you have many materials at your disposal to build a quality structure and flavor in your baked goods. You simply have to find the materials that work best and that your palate enjoys most.

What is the difference between brown rice flour, white rice flour, and sweet white rice flour?

You'll find that the rice flours are as common to gluten-free baking as wheat flour is to traditional baking. There are subtle differences between these three flours, primarily with respect to baking performance. From a dietary fiber and protein perspective they are similar to each other, except that brown rice flour has approximately forty fewer calories per serving than sweet white rice flour. All three rice flours are lower in protein than whole wheat flour and each have approximately three fewer grams of dietary fiber per serving.

After the hulls of rice kernels are removed through the milling process, you are left with the starchy content of the rice grain and much of the nutritional content of the hull is no longer there. Rice flour can have a faintly sandy feel, and less finely ground brown and white rice flours can be a tad gritty to the touch as well as the palate.

Brown Rice Flour versus White Rice Flour

Whereas white rice flour is stripped of nearly all its nutrients after milling, brown rice flour maintains a few more and is slightly more nutritious than white rice flour. Brown rice flour naturally has a light brownish hue, while white rice flour is just that: white. While both flours are often selected as the main flour in a flour blend, in terms of baking performance, brown rice flour is a tad higher in protein, which can subtly enhance the extendibility of gluten-free dough.

Sweet White Rice Flour

This flour is made from glutinous (gluten-free!), short grain white rice commonly referred to as "sticky rice" in Asian cuisine. Due to its stickiness, sweet white rice flour helps bind the other flours in a recipe together and brings extension and pliability to gluten-free batters. It's often used as a portion of a flour blend in baked goods that require structure, like breads, muffins, and pie crusts. Sweet white rice flour shares a similar protein content to brown rice flour.

What is the difference between potato flour and potato starch?

Interestingly, these two ingredients are often mistaken for each other, particularly by the gluten-free baking novice. But there are some key differences that make these two flours almost as different as day and night.

Potato flour is heavy and dense to the palate because it's made from the whole cooked potato; potato starch is lighter in weight, as it's made only from the starch. Potato starch is similar to corn starch and is often used interchangeably.

Both potato flour and potato starch are rarely used alone in baking—they are generally added to complement the flour blend of a particular recipe. While potato flour can impart a chewy and moist quality to a baked good, potato starch will help bring a lightness to the product.

Potato flour maintains many of its nutrients, including protein and dietary fiber. Potato flour is made by cooking whole potatoes, drying them, and turning them into a finely ground flour. But potato starch has no protein or dietary fiber to speak of. Potato starch is processed from just the starch of the potato and this portion of the potato is not nutrient rich. Consequently, potato flour has nearly three times as many calories per serving. Potato flour is a "food" flour, whereas potato starch is more of an "agent" used to achieve a particular effect, like airiness in baking or thickening for sauces. You don't run to potato starch for its nutritional value. However, both potato flour and potato starch can be used in lieu of wheat flour for thickening sauces, soups, and gravies.

Is there a difference between tapioca flour and tapioca starch?

No, there is no difference. The terms "flour" and "starch" are used interchangeably to describe tapioca, which is made from the South American tuber root known as manioc, cassava, or yucca. Tapioca is often used to create a flour-blend partnership with rice flour and potato flour, or as starch in baked goods—this ingredient is most prized for its ability to bring a light quality to baked goods. Tapioca becomes chewy when baked and browns beautifully for a crust, as evidenced in the savory, chewy cheese bread rolls of Brazil known as *Pao de queijo*.

This stark white, powdery South American staple is a caloric-carbohydrate, but has virtually no protein, dietary fiber, fat, sugar, cholesterol, or sodium.

What is xanthan gum?

If you have never heard of xanthan gum before (pronounced *zan-thun*), you're not alone. Most consumers don't learn about this ingredient until going on a gluten-free diet. But xanthan gum has long been used in the food manufacturing industry in products such as salad dressings, milk products, dry baking mixes, chewing gum, and much more. The increasing need for ingredients that can help replace the gluten effect of wheat has brought attention to xanthan gum, which is also high in fiber.

Scientifically speaking, xanthan gum is a fermented sugar derived from corn. The end product is an odorless, powder-like substance with an off-white color. Xanthan gum is not a finished food or an ingredient that you can eat alone, like sugar or a spice, nor is it used to add flavor or nutritive value to a product. Rather, xanthan gum is used to produce a desired effect in making a food. It helps ingredients like gluten-free flours bind together, and helps give structure to baked products without gluten. When the powder is moistened, it becomes invisible, sticky and viscous. For example, xanthan gum provides viscosity for products like salad dressings. And when xanthan gum powder is moistened in a gluten-free bread batter or cookie dough, it

helps bind the flours and other ingredients together, producing a sticky, gluten-like quality that keeps your gluten-free baked goods from falling apart.

What is guar gum?

Guar gum (pronounced like *gwahr*) is similar to xanthan gum—it is not an ingredient you eat alone, but is used to help ingredients bind together, thicken, and stabilize, and to create structure. Made from the seed of a cluster plant grown in India and Pakistan, guar gum is commonly found in commercial food products such as ice cream, puddings, cream cheese, and sauces. Guar gum is a powder that looks, smells, and feels like xanthan gum but is used less frequently in gluten-free baked goods. It is common to find gluten-free cookbook authors combine xanthan gum with a guar gum in the same recipe to capitalize on the structure building properties of both.

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