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Deadly Sins

of Gluten-Free Bread

...AND HOW TO AVOID THEM

by Christopher Anderson

If you've tried living gluten-free for more than five minutes, you know only too well that most of the gluten-free bread out there ... well, let's be honest, it sucks. But do you know why?

In fact, there are a number of reasons, which you'll soon learn. But the good news is that it doesn't have to be that way. If you are pursuing a gluten-free lifestyle either out of necessity or by choice, you can still eat bread that is both good tasting and good for you.

Once you discover the secrets that I will reveal here, you will never again have to settle for squat bricks with a cardboard

texture, or gummy, mushy loaves. You can say good-bye to gritty, papery slices that butter will not melt on. And you will be done with bread that has either no taste at all or an unpleasant beany flavor.

Sin 1: Using the wrong type of flour

Good bread starts with good flour. The flour you use will influence both the taste and the texture of the bread. This is especially true for gluten-free flours, so it is important to make the right choice.

The role of gluten in baking

In order to understand the problems with most gluten-free flours, you need to first learn a bit about the nature of traditional flour. Wheat flour is milled from wheat berries, which contain starches, proteins, and fats. The primary proteins in wheat flour are *glutenin* and *gliadin*. Glutenin provides most of the strength and elasticity in dough, allowing it to bounce back after it is stretched. Gliadin, on the other hand, provides the stretch.

On their own, glutenin and gliadin are just lifeless strands wrapped around granules of starch. But they transform when they come in contact with water, a process known



as *hydration*. Once wet, the protein molecules link up with one another and form long elastic chains called *gluten*.

These gluten strands combine to form a network that traps swollen starch granules and gas bubbles produced by yeast or chemical leaveners. This network stretches as the batter or dough rises and then solidifies, giving the finished bread or other baked good its structure and “chew” (texture).

Several factors can affect gluten development. One is the flour itself. Bread flour is typically milled from high-protein wheat, which is capable

of developing more gluten and thus better structure. The result is ideal for chewy artisan bread. Cake flour, on the other hand, is made from low-protein wheat, so it produces less gluten, which is perfect for tender cakes. Traditional all-purpose flours typically fall in between the two in terms of protein content.

Gluten development is also affected by the amount of water present. The more water that a dough or batter contains, the stronger and more elastic the gluten will be. This additional strength and elasticity produce an airier bread, with an interior hole

structure that professional bakers refer to as a “good crumb.”

A third factor is the mixing time of the dough or batter—the longer it’s mixed, the more gluten forms. That’s why cake or muffin batter is gently stirred until it’s just combined, whereas bread dough is kneaded extensively.

No such thing as “all-purpose” gluten-free flour

Perhaps you’ve seen, or have even bought, “all-purpose” gluten-free flour. Seems convenient, right? Unfortunately, it’s a marketing ploy, as there is simply no one-size-fits-all solution. If you want to remove wheat flour from your favorite recipe, you need to think about the role that flour is playing in the recipe in order to choose the right substitute. Remember that wheat flour contains both protein and starch. That means that the appropriate substitute will vary, because some recipes rely on one but not the other.

In baking, the main role of gluten is to provide structure. Finding an alternative to replicate this structure is especially challenging because most gluten-free flours contain less protein than wheat, so they don’t do as good a job of holding the starch granules or trapping air bubbles. The proteins that they do contain are also generally less elastic than gluten. So, in order to replace wheat flour with a lower-protein option, like rice flour, you must boost the effectiveness of that protein (which you’ll learn about soon).

No beans, please

Many gluten-free cookbooks advocate the use of bean flours, like those made from garbanzo or fava beans, because beans are high in protein. The major problem with this approach is that these flours have a distinctive beany flavor. Not that there is anything wrong with the taste of beans, but it is an odd and unexpected flavor to encounter in baked bread. And when it’s used in sweet baked goods, it is so out of place that it can be



downright ... well, disgusting. So, unless you're looking to make bean cookies or bean bread, I recommend you steer clear of bean flours and commercial mixes that contain them for your baking.

Down to the nitty-gritty

Another common substitute for wheat flour is rice flour, which has a more neutral taste than bean flour but isn't perfect by itself either. Rice flour has less protein than wheat flour and a much higher starch content. This can lead to that gritty mouthfeel that people tend to associate with many gluten-free baked goods.

But that may not be the only reason your baked goods taste gritty. It could also be due to the texture of the flour itself. If the rice isn't finely ground, you're left with coarse granules that you'll be able to feel when you bite into the bread. Not only that, but the coarser the flour, the less liquid and fat it is able to absorb. This can lead to a mushy texture and an unpleasant

greasy feel in the finished product. While this is true of both white and brown rice flours, the problem is potentially worse with brown rice because it also contains bran, making it coarser and therefore grittier. Brown rice also has a short shelf life and can impart an unwelcome earthy flavor to bread.

In summary, if you want [the right flour](#), make sure it has a neutral taste and the right balance of protein and starch, and that it is ground sufficiently fine.

Sin 2: Using the wrong pan

If you've ever baked your own gluten-free bread, or even bought some from the store, then you're probably familiar with what I call "the brick." The first loaf I ever baked turned out so small and dense I was tempted to use it as a paperweight. So, what's going on here?

Gluten-free bread dough does not have the firm texture and structure of traditional wheat dough (a consequence of saying farewell to gluten). As a result, it doesn't hold its shape well without support, so the pan you use to bake it has a significant impact on how it turns out. If the pan is too big, the bread will turn out flatter and denser than it should be. If you've ever had sandwich bread that's not tall enough to slice for sandwiches, you know what I'm talking about.

The solution is to use a pan that properly supports the dough as it's rising during both the proofing (the period when the dough rises) and the baking stages. One option is to buy [a pan specially designed for gluten-free bread](#). These pans have higher sides than normal bread pans to give the dough more vertical support.

If you don't have one of these pans, don't worry. With a little extra effort and creativity you can jerry-rig a solution. Start with a 1-pound (8½" x 4½") bread pan rather than a 1½-pound (9" x 5") pan. Then use aluminum foil to form a collar around the rim of the pan so that it rises about an inch above the top of the pan. This technique (which is often used for making soufflés) will give the dough the extra support it needs for more vertical lift.

Sin 3: Using not enough liquid

The wetter the better

Even if you use the right gluten-free flour and an appropriate pan, your bread may still have some problems. As I mentioned, the more water you add to traditional wheat flour, the stronger the gluten networks become, so you get bread that's airy and has good structure and chew.

But does adding more water help gluten-free bread? Absolutely!

In fact, most gluten-free flours are best mixed into something that actually resembles cookie dough more than it does traditional bread dough. There are several reasons for this. For one thing, as already mentioned, gluten-free flour—especially rice flour—cannot absorb as much liquid as wheat flour can.

You also need to consider the nature of the starches typically used in gluten-free flour mixes, which include cornstarch, tapioca starch, and potato starch. These starches need to be fully hydrated in order to reach full viscosity (a fancy word for thickness) and to do their job. Unless you use a [special pre-hydrated starch](#), you need to let the dough rest for at least 30 to 45 minutes after mixing to properly hydrate it. (But beware; you don't want to let your dough rest for too long—more on this later.)

Finally, more water allows for more steam, which also helps the bread rise.

Low and slow

In order to compensate for the additional water, you need to decrease the baking temperature (to around 350°F/177°C for bread) and increase the baking time. This allows the majority of the excess moisture to evaporate. But remember to do both. If you decrease the temp without increasing the time, you'll be left with a wet, gummy crumb and an undercooked loaf. Conversely, if you increase the time without decreasing the temp, you will burn the crust and end up with a papery, dry crumb.

One last point: It's a good idea to periodically check the actual temperature in your oven with an oven thermometer. Just because you set it for 350°F does not guarantee it's actually 350°F inside your oven. It is not uncommon for an oven (even an expensive one) to run 30°F or even 50°F too hot or cold. If you find that yours is off by more than a few degrees, it may be possible to recalibrate it (check the manual that came with the oven, if you can find it). Otherwise, you'll need to compensate for the difference by changing your preheat temperature.

Sin 4: Using the wrong binder

You've already learned that one of the major jobs performed by gluten in the baking process is to give structure to the dough. By creating an elastic network, gluten proteins are able to trap and hold both swollen starch molecules and air bubbles that cause the bread to rise. Because gluten-free flours contain more starch and less protein than wheat flour, they are not capable of forming the same type of strong network.

This is where binders come in. These ingredients strengthen the protein networks in baked goods and make them more elastic. In essence, they act like glue to give gluten-free baked goods the proper shape.

Typical binders belong to a category called gums or *hydrocolloids*. This is a scientific way of describing a substance made up of particles (polymers, actually, if you're into chemistry) suspended in water.

The first thing you need to know about binders is that they tend to be expensive ingredients, but a little goes a long way. Indeed, if you add too much, it will turn the crumb of your bread into a gummy mess.

The two most common binders used in gluten-free recipes are xanthan gum and guar gum. If you have any experience with gluten-free baking, you have undoubtedly come across these ingredients. However, both have their drawbacks.

Xanthan gum is secreted by the bacteria *Xanthomonas campestris* as it ferments simple sugars. This gum is widely used as a thickener and stabilizer in commercial products like salad dressing and toothpaste. However, it does have a downside. It tends to have what scientists call a mucilaginous texture. In plain English, it feels like snot in your mouth. If you have ever experienced an unpleasant gumminess while eating gluten-free bread, this may very well be the reason.

Guar gum is a powdered extract from the seeds of the guar bean. It works like xanthan but without the excessive gumminess. However, it is quite high in fiber and can thus have a laxative effect. It also tends to create a slightly starchy texture in baked goods and can impart a beany flavor.

Another binder that excels at creating the necessary structure for your baked goods, while avoiding some of the pitfalls of other gums, is methylcellulose. Don't let the name intimidate you. This powder, made from plant fiber, is also widely used as a thickener and emulsifier in commercial foods. It is neutral-tasting, nonallergenic, and, since it is not digestible and just passes through your system, calorie-free. There are many different types of methylcellulose available, so make sure you choose one that has been especially designed as a [gluten replacement](#).

Sin 5: Using the wrong leavening agent

By now you understand that one of the primary jobs of gluten in traditional bread (and binders in gluten-free bread) is to trap air bubbles that enable the loaf to rise and create a beautiful texture and crumb. In essence, bread is really a foam made up of thousands of tiny air pockets (not unlike whipped cream or meringue), which becomes solid when it is baked. But where does that air come from?

One source that I've already mentioned is steam from the moisture in the dough. But this is really a secondary source. The primary source of lift for your loaf comes from a leavening agent. Leaveners come in two basic forms, biological and chemical. Both types are used extensively in baking.

The most common biological leavener is yeast, a microorganism that eats sugars and secretes alcohol and carbon dioxide. Yeast is also the leavener primarily used

in bread dough, where it converts the sugar in the flour to carbon dioxide (CO² gas), causing the loaf to rise during the proofing and baking stages.

The most common chemical leavening agents are baking soda and baking powder. These are used in most baked goods besides bread, including cookies, cakes, muffins, and quick breads. Like yeast, they create carbon dioxide, but it's through a chemical reaction in which an acid (low pH substance) combines with a base (high pH substance). You may have experienced this chemical reaction firsthand if you've ever taken an antacid to relieve heartburn.

Yeast by itself works great in wheat-based bread because enzymes in the flour release plenty of sugar from the starch for the yeast to feed upon, and the gluten strands do a great job of capturing the CO² bubbles produced by the yeast. Yeast is also partly responsible for the characteristic taste of bread, which is appropriately described as yeasty.

Unfortunately, as we've seen, gluten-free bread has more trouble trapping the bubbles created by the yeast. It needs more help to create the same lift, especially during the baking process. And you can't just add more yeast, because the heat in the oven quickly kills it.

The solution to this problem seems fairly straightforward: Simply combine both yeast and chemical leaveners in your bread dough. This way, the yeast will create lift during the proofing stage, and the baking powder or soda will continue the work once the bread is in the oven.

But there's a catch. You may recall that the starches in gluten-free flour need 30 to 45 minutes to rest in order to fully hydrate (this period, by the way, conveniently corresponds to the proofing time). The problem is that normal baking soda or baking powder will begin to react as soon as it is mixed in with the wet dough. So after the resting/proofing period is over, there will be very little activity left to create more bubbles in the oven.



Fortunately, there's an easy solution. It comes in the form of a [special type of baking powder](#) that is activated only by the heat of your oven. Using it in conjunction with yeast, you get the best of both worlds, ensuring the maximum rise for your gluten-free loaves.

Sin 6:

Using too much fat

One of the primary reasons that baked goods are so yummy is their fat content. Let's face it, without butter, shortening, or oil, most baked goods wouldn't be worth eating. And while some traditional bread recipes rely on a lean dough (one with little fat), gluten-free breads seem to cry out for the richness of fat.

Unfortunately, fat—including our beloved friend butter—doesn't absorb in gluten-free flour as well as it does in wheat flour. This is especially true with coarser gluten-free flour. So, whether you're baking gluten-free bread, cookies, muffins, or cake, you need to take it easy on the fat—and not just for health reasons.

Think twice before you use that classic recipe

This is important to keep in mind, especially when you're trying to convert a traditional recipe into a gluten-free one. If you simply replace the wheat flour with the same amount of gluten-free flour and keep the fat content the same, you'll be in for a disappointment.

Instead, you need to cut back on the butter, or you'll be left with a greasy product. Naturally, baked goods that are higher in fat, like cookies and cake, will suffer the most. In fact, your gluten-free cookies may turn into a puddle on your baking sheet, leaving you with paper-thin cookies. But this rule applies to all baked goods, including bread, because gluten-free flour will struggle to absorb the fat. So lighten the load!

Now, you may not be so worried about your bread, but what about those baked goods that rely on butter for richness? This is where you'll get to be creative. You can cut down on the butter and replace it with other ingredients to make up for any lost richness. Cream cheese is an option. As is sour cream. It's up to

you—and these variations will help you transform your gluten-free baked goods into your own unique creations!

Sin 7:

Baking too much at one time

You've done everything right. You nailed the flour, you used the proper amount of water, you chose a good leavener and an appropriate binder, you cut down on the fat, you let the dough hydrate, your oven is at the right temp, and you're using the right pan. Your bread is going to be great!

Here's one final caution: Don't go overboard.

Gluten-free bread (like most gluten-free baked goods) doesn't have a long shelf life. The culprit is a process known as starch retrogradation, which is a fancy name for staling. Here's how it works. The starch molecules absorb moisture and swell in the oven as they begin to gelatinize. But when the bread cools, the starch molecules contract and begin to squeeze out the moisture again. This dries out the bread and makes it stale.

Of course, all bread stales eventually, but thanks to its starch makeup, gluten-free bread will dry out much faster than traditional bread. Refrigeration will cause the bread to dry out even faster because the cool, dry environment facilitates starch retrogradation. So, as a rule, make only as much as you can eat within a day or two, and store it, well wrapped, at room temperature.

There are, however, a couple of tricks for extending the life of your bread. A simple one is to turn your bread slices into toast. The heat from the toaster will cause the starch to begin to gelatinize again, temporarily increasing the moisture and giving you another day or two out of your bread slices.

Another option is to use your freezer. Gluten-free bread holds up relatively

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The advertisement features a cartoon loaf of bread with arms and legs, standing on a green circular base. The loaf is smiling and has its hands on its hips. The background is a light green color. The text is in various fonts and colors, including green, white, and black. The overall tone is positive and humorous.

well if frozen shortly after baking, because the moisture is crystalized in the starch before it has a chance to dry out. Then, when the bread is thawed, the crystals melt and the bread retains this moisture. If you are going to freeze the bread for later use, first cool it to room temperature and then slice it. Wrap up a few slices in separate airtight packages so that you can thaw them as needed rather than having to defrost the entire loaf at once. Your bread will last for a couple of months in the freezer.

If your bread does become stale, there is one final trick to help prevent you from wasting any. You can simply turn your bread into croutons for salad or breadcrumbs for other recipes. Making

croutons is as simple as cutting the bread into chunks and placing them in the oven at a low temp for about 20 minutes to remove any remaining moisture, which could cause them to mold. To turn the croutons into breadcrumbs, simply grind them up in a food processor until they are the desired consistency. Both croutons and breadcrumbs can be stored for several months in airtight container at room temperature.

Now that you know the secrets to making perfect gluten-free bread, it's time to give it a try. You can also apply what you have learned to other baked goods and ensure that you and your family will enjoy a satisfying gluten-free lifestyle. ■