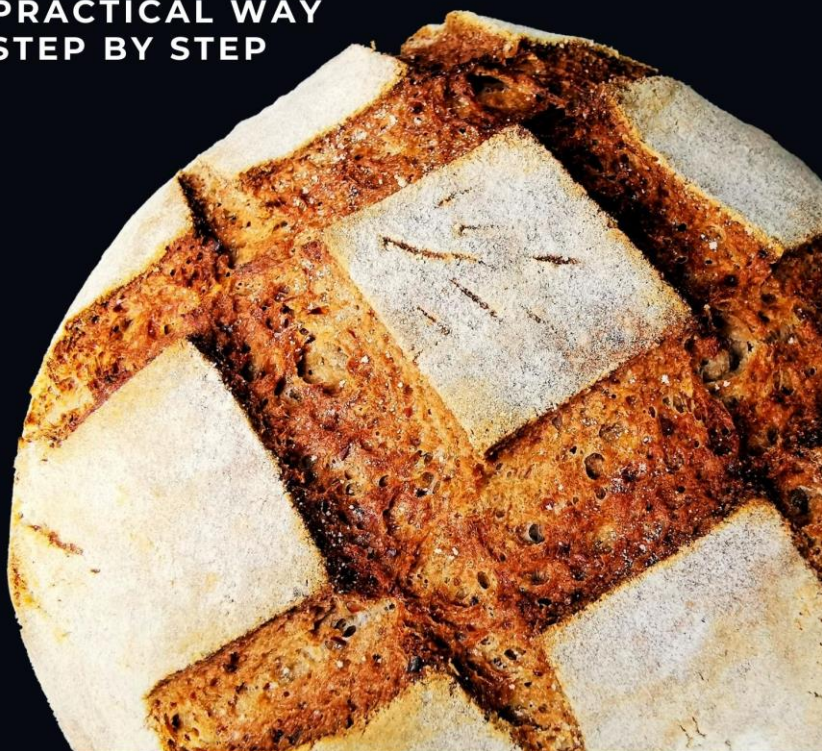


MOMO'S GUIDE

TO GLUTEN FREE & VEGAN SOURDOUGH

LEARN HOW TO
BUILD AND BAKE
YOUR OWN RECIPES
IN A SIMPLE AND
PRACTICAL WAY
STEP BY STEP



Mauricio Belmar M.

MOMO'S GUIDE
TO GLUTEN FREE
& VEGAN ARTISAN
SOURDOUGH

Mauricio Belmar M.

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I thank my family and the universe for supporting me,
giving me strength and encouragement during this
crazy journey of detachment and reinvention.

Momo

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WELCOME

Hello. My name is Mauricio Belmar, also known as "Momo" to friends and family. I would like to start by thanking you for your interest in this guide that I have written with great affection to facilitate the learning process to those who wish to venture into the wonderful new art of gluten-free sourdough baking.

I started this journey a few years ago when my lifestyle and some unexpected ailments took me away from gluten and other foods that I used to love and led me through this path of learning something completely new at least to me. Back then, around 2015 there were still not many good recipes and techniques on the internet, so I had to investigate and try many recipes and gradually develop my own techniques and conclusions. I do not consider myself the creator of this information, rather, a compiler of what other people have done before me, and probably a good analyst of best practices and techniques and finally a humble documenter of what in my opinion works perfect to make loaves that have nothing to envy to traditional sourdough.

I am not going to lie to you, these gluten-free sourdough breads cannot be at all compared with traditional sourdough, these breads have other flavors and

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textures, different types of crumb and crust, we use completely different techniques, ultimately, this is a whole new science that is in constant development, especially at the present time when more and more people are moving towards a healthier and more conscious diet.

I started to write this guide during the extra free time I had due to the covid-19 quarantine early in 2021, I wrote it in Spanish initially in the form of a simple eBook guide for the students attending my online workshops. Later I posted a nicer version of the guide in my website, with nice pictures and more information. It started to sell very well in Chile my home country, and I was quite surprised when some people from abroad started to ask for other ways and payment methods to download the guide in their countries. Also some foreign people living in Chile asked me if I had any plans to post it in English as well. This encourage me to embark in the not quite simple task of translating the guide to English. I did not have the resources to pay for a professional translator, so I did the work, and I have to say, it was not easy at all, it took me several months to get it done. I hope you will find the translation comprehensible enough and I apologize beforehand if you run into any mistranslations or grammar issues. I avoided google translator as much as I could since it actually ended up doubling my efforts.

I really hope you do enjoy and get a lot out of this guide. This is the first edition and if you happen to find any errors or information omissions that you consider important to be included, please do not hesitate to send me a note in order to improve future editions. You will find all the contact information in the last chapter of this guide.

Gluten-free and vegan sourdough

When we decide to quit gluten, either for health reasons or simply to make changes in our nutrition, we face many difficulties that at first can be somewhat overwhelming, however, with a little help from this guide, some good examples and very detailed explanations, we will be soon able to make delicious and nutritious healthy breads.

“Gluten free sourdough has nothing to envy to traditional sourdough, on the contrary, it can be much more nutritious.”



In the picture, two toasts of different gluten-free and vegan sourdough loaves, one is a very simple white bread made with rice, corn and oat flours, and the other one is a much more complex loaf, made with buckwheat and flaxseed flours. With these breads there are actually no limits to the imagination and the mix of flavors that we can create.

Get ready to re-learn everything about sourdough. Gluten-free and vegan sourdough is a whole new art where none of the traditional sourdough methods apply.

Don't stress. Go slowly and enjoy a stress-free learning.

One of the comments that I get the most from the people who have participated in my workshops is that it seems like too much information for them, and this is somewhat daunting and it sort of kills the eagerness of starting making their breads, so they usually procrastinate that first attempt and it could take weeks or months before they feel encouraged enough to make that first loaf.

Well, the purpose of this guide is to teach you all the techniques you need to know in order to create your own recipes from scratch, and for this, you need to understand very well the effect that each of the ingredients on the recipe has on the final product. This learning process must unfortunately take some time, and it is important that you manage to assimilate and understand each single ingredient.

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You will realize that after trying out the first few recipes, you will become more and more confident and later you will use the information in this guide just as a reference to make changes and create your own wonderful recipes adjusted to your personal tastes.

So please, don't feel discouraged and give up ahead of time. Take your time, go step by step. I would suggest to get a first read through the complete guide without stopping to analyze or think too much, just get an idea of all the information that is included in the guide. Then go back to chapter 2 and start your learning journey. Read again each chapter, take notes, write down questions or doubts that may arise, do some additional research if you feel like, you can post questions in my website forum. Share with a family member or friends and enjoy the process. The most important thing is to have fun while learning something new, so please do not get stressed.

Why gluten-free and vegan?



If you already know everything there is to know about gluten and what it does to our health, you can skip this chapter and go straight to the good parts. Otherwise, you can stay here and read a bit more about my personal story and maybe discover some new information.

Years ago, around 2014, when I was diagnosed with various "autoimmune diseases", traditional medicine was not able to identify the root cause of my illnesses and only qualified me as a new case of autoimmunity and sentenced me to a lifetime of medications to treat the symptoms, but not the root cause of my problems. Well, I did not settle for that fate, and after reading many books about gluten and a fairly new disease called "Leaky Gut", I consulted again with several doctors, but the answer was that "leaky gut" was just a theory and there were no methods to identify the disease or even medications to treat it. So I decided to treat it on my own and leave behind gluten, dairy, sugar and all other foods that triggered inflammation in my body. And that's how after almost two years suffering with medications and no improvements at all, I slowly started to regain control of my health.

Through a lot of reading and research I learned that when an autoimmune disease manifests itself with symptoms affecting your health, it means that most likely it has been there silently brewing inside your body for years and

maybe even decades. Hence, it is really important that we are able to recognize them in time and stop the process before it becomes a disease. Gluten gliadins, like many other lectins found in many foods are a type of protein, many of them highly genetically modified, and each time we consume them they cause damage to the walls of the intestine until it becomes permeable, this means that very small cracks form along the lining of the intestine which allows food particles and endotoxins to enter the bloodstream. When this happens, the immune system is activated and starts generating antibodies and an inflammatory response. Then, since the immune system has memory, every time we consume these foods, if the permeability is not treated and healed, the autoimmune response manifests again and again, that's why today there are so many people with allergic reactions to a myriad of different foods.

In my particular case, it was not only gluten that caused an inflammatory reaction, but also other less suspicious foods such as onions, scallions, garlic and legumes. It was through an "Elimination Diet" that I managed to identify the foods that caused inflammation, and when I say inflammation, I do not mean only stomach bloating, but also joint pains, itching, skin hives, acne, headaches, brain fog, anxiety, sleep disorders, etc.

"The effects of food go far beyond just a stomach reaction."

Once I quit the foods that caused inflammation, all the symptoms of my supposed unexplainable autoimmune diseases slowly began to fade away until most of them completely disappeared.

Quitting Gluten and reducing or eliminating the consumption of lectins, dairy, sugar and other foods was not very easy, but it is a process that must be taken slowly, ideally with the support of a professional healthcare provider and perhaps most importantly, with a support group where your own family and friends play a fundamental role, otherwise, your own loved ones can sabotage your healing process.

The history of gluten is long, and studies and theories point mainly towards the genetic modifications made to grains by Dr. Norman Borlaug during the 50s and onwards. Studies show a direct relationship between the growth curves of autoimmune diseases and the introduction of GMO grains to the global market. There is a lot of literature on this. If you are interested, you can look up the studies and publications by many doctors such as Dr. Alessio

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Fasano, Dr. William Davis, Dr. David Perlmutter, Dr. Michael Greger, Dr. Ciaran Kelly, Dr. Ivor Hill, and many others.

For all these reasons, I decided to completely leave gluten out of my diet. It was a difficult decision nonetheless. As a former sourdough lover, making my own sourdough loaves for many years, I decided to give it a try and find ways to use sourdough but this time, with gluten-free flours.

Back then, when I started searching the internet for gluten-free sourdough recipes, there were practically none. The only gluten-free regular bread recipes I could find were all made with eggs and commercial yeast, and it took several years before interesting alternatives started to appear in order to replace eggs.

I am not a vegan so far, I do try to avoid all sorts of animal meat mainly due to digestive discomfort. I do believe though in respect to all animal life and that it is time to start looking for other sources of protein. I know that this is a personal process and that everyone has to do this when their consciousness change. And I can see that this is happening, every day more and more people, especially young people are going vegetarian or vegan and not just because it is fashion but because they really care.

I decided back then to start testing with gluten-free sourdough and some vegan options to avoid the use of eggs, also because I really didn't want my breads to taste eggy and to have that texture of a sponge cake, which most of the recipes in the internet had. If you are not a vegan or you don't have problems with the use of eggs, you can absolutely use them and we will talk about it in chapter 6 when we go through the subject of binding agents that emulate gluten.

If you have ever bake a traditional sourdough, you know that it is made using just flour, water, salt and your sourdough starter. So I wanted to keep that premise and make this GF sourdough breads vegan and as simple as possible.



CHAPTER 1 WHAT IS SOURDOUGH?

Before we start talking about the science and techniques behind the production of a sourdough bread either with or without gluten, we must stop to explain what sourdough is. For those of us who have been in this for a long time, it is not new, but for many it remains a mystery and somewhat of an abstract thing of gastronomic jargon.

When you are going to bake bread, the normal and traditional way is to use some yeast, either fresh or instant, any of those of the shelf yeast you can find in the supermarket. Then, all you have to do, is to incorporate into your dough the quantity indicated in the recipe, in some cases activating the yeast first in lukewarm water with a little bit sugar or honey.

This particular yeast whose scientific name is "Saccharomyces cerevisiae" belongs to the brewer's yeasts group and is widely known because of their speed to leaven all sorts of bake products. In one or two hours you have your breads ready for the oven. This yeast has been genetically manipulated and patented by laboratories to produce them industrially for the production of breads, beers, wine, rum, etc. The best feature of commercial yeast besides its leavening speed, is the facility to reproduce the same exact recipe with the same results every time.

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In contrast, in the environment, in the very air that we constantly breathe there are thousands of families (strains) of wild yeast floating around. They usually land on food sources and start eating the sugars which will start the fermentation and decomposition process.

“At some point in history, someone must have left an unprepared dough and realized that over time the dough was getting fluffier.”

Sourdough is nothing more than a mixture of water and flour where after a few days, a bacterial succession starts to occur. The bacteria present in the flour and the environment begin to generate acetic and lactic acid which acidifies the dough and creates a medium in which only certain environmental yeasts can survive and other pathogens die because of the acidity. Sourdough is this, an acidified dough populated with wild bacteria and yeasts.

The acidity of sourdough, as in kefir, sauerkraut or kombucha, allows for an acidic medium in which, in general, only some microorganisms that are beneficial to humans survive.

The types of bacteria and yeasts depend on the environment, there are more than 1500 known types of wild yeast, and therefore, the environmental yeasts in one place can be completely different from those of any other city, country or region, which will obviously give very different flavor and aromatic characteristics to the breads, very much like “wine terroirs”.

To keep the microbial population of a sourdough alive and active, it must be permanently refreshed by adding fresh water and whole grain flours (gluten or gluten-free), otherwise the dough over-acidifies and the microorganisms eventually die and the dough decomposes.

When we are going to bake a bread, instead of using commercial yeast, we use a little of this sourdough, which is called “sourdough starter”. It will generate the same leavening effect but taking much longer, which in this case will be very beneficial for our health.

“Commercial yeast takes 1 to 2 hours to leaven a dough, while sourdough can take 3 to 24 hours depending on temperature.”

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One of the main advantages of using sourdough is that we can leave our loaves fermenting slowly in the refrigerator overnight, which will allow the bread to develop flavor intensity, aroma and complexity. Depending on the mixture of flours we use, some very extraordinary flavors can be achieved.

Long slow fermentation in cold temperatures ($< 5^{\circ}\text{C}/41^{\circ}\text{F}$) is quite beneficial for our health because it eliminates anti-nutrients such as lectins or phytic acid, which are found in the bran of seeds, legumes and grains, these otherwise would interfere with nutrients absorption in the gut. Long fermentation will also help to enhance the bioavailability of nutrients already present in the flours. It will also make the bread carbs much easier to digest.

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CHAPTER 2 MAKE YOUR OWN SOURDOUGH

WITH MUCH LOVE AND PATIENCE

The first step before you start preparing your gluten-free sourdough breads is to get that sourdough starter from somewhere, or simply make your own at home.

The first option is the easiest. If you know someone who has already done the job and would be willing to share some of their sourdough, then you are ready to go. You can also approach my workshop or any other bakery that works with gluten-free sourdough and ask if they could give or sell to you some sourdough starter. There are also many groups on social networks that share a lot of information and tips on how to get gluten-free sourdough made from various types of flours.

And if none of the above options work for you, do not despair, you can make your own sourdough at home, there is nothing complex about it, and it just requires a little time and patience. Usually and depending on the environmental conditions of temperature and humidity, a sourdough starter should be ready between 5 to 12 days. But once it's active, you can use it for the rest of your life and pass it on from generation to generation. In Europe,

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there are bakeries that brag about their 200 years old sourdough starters... Well maybe gluten-free sourdoughs are not so old, since it is something rather new, although buckwheat sourdough may have a longer history in old China... something interesting to investigate for future editions.

So. If you have finally decided to make your own gluten-free sourdough starter at home, let's get to work.

The first thing you have to decide, based on your personal preferences and availability, is the kind of flour you are going to use to make your dough, today there are many gluten-free flour alternatives on the market. In my experience the ones that work best are organic and whole grain flours. By being organic you make sure there will not be any chemicals interfering or slowing down the bacterial succession during the fermentation process. And by being whole grain you make sure to have the most possible types of wild yeast.

“Look for organic whole grain flours.”

Once you have your sourdough starter ready and super active, in order to make the bread you do not need to use organic flours, they are still quite expensive in some places, but to successfully start your sourdough starter, I always recommend looking for an organic whole grain flours. Most regular gluten or gluten-free flours on the market have pesticide residues and other chemicals used to extend their shelf life. These will totally prevent or seriously delay microbial growth.

Another option that worked well for me is to mix simple and inexpensive flours such as brown rice flour with some pseudocereal flour such as quinoa, amaranth or buckwheat (which is not wheat).

Organic whole grain flours have lots of yeasts in the bran and on contact with water they quickly begin to proliferate and do their job.

“Avoid using commercial gluten-free flour blends as these additionally include starches, binding agents and sometimes even other chemicals and leavening agents.”

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Then, you have already bought your GF flours, let's say you decided to use brown rice flour and quinoa flour, you can mix them in the proportion that suits you, for example at 50% each, or 70% brown rice flour and 30% quinoa flour, or 90% brown rice flour and 10% quinoa flour. Here the important thing to understand is that if you use too much quinoa flour, the loaves you will bake with this sourdough will tend to taste like quinoa, so your decision will finally depend on the flavors you would want to develop and try.

Once you have the raw material, let's see what additional elements you're going to need:

- Filtered water (free of chlorine and fluoride)
- A digital kitchen scale
- A glass jar or bowl
- A silicone or wooden spatula
- A coffee filter, tea towel or a piece of clean cheese cloth to cover the jar
- A rubber band (to tighten the cover)

Day 1 - Make your sourdough base

In a clean glass jar or bowl, mix 50 gr (2 oz) of your gluten-free flours mix with 55 to 60 gr (2.1 oz) of water. You should get a batter similar to that of pancakes instead of a dough, a little bit thicker perhaps. Then, cover the jar with a clean cloth and the rubber band to prevent it from being contaminated. Then, you should feed this mixture with 50 gr (2 oz) of flour mix and 50 gr (2 oz) of water 3 times a day (morning, noon and afternoon), try to make the time intervals similar, for example every 6 or 7 hours.

“Keep your sourdough starter in a warm place at least at 20°C (68°F)”

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Days 2 to 3 – Do not expect too much during these first two days

Keep feeding your sourdough 3 times a day with 50 gr of flour mix and 50 gr of water (or 2 oz of each). If you see that it thickens too much, add 10 ml more of water at a time (10 ml = 10 gr = 0.4 oz). On the third day you may start to see some bubbles peeking on the surface, this is a good sign, but if not, patience, you will get there.

Days 4th to 6th – Some active bubbling starts to show

On the 4th day you will already have almost 900 gr (or 36 oz) of batter, so it is time to reduce it. Rescue 50 gr (2 oz) of dough and discard the rest, or use it to make pancakes, cookies or whatever you can think of.

To the rescued 50 gr (2 oz) of sourdough batter, add 50 gr (2 oz) of flour mix and 55 gr (2.1 oz) of water and mix well. This process will be called from now on as "Refreshing the sourdough".

You can pass it to a bowl to wash clean the glass jar, and then return it to the jar. Then cover the jar again with a clean cloth and the rubber band.

Repeat this "Sourdough Refresh" by rescuing 50 gr (2 oz) each time and feeding it again twice a day during the 5th and 6th day.

At some point the sourdough will become very active and will begin to create many bubbles and to rise and double in volume.

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Once you have refreshed the sourdough and after 3 or 4 hours it has risen and doubled its volume, it means that your sourdough starter is ready to be used.

“A gluten-free sourdough will never triple its volume and overflow like regular wheat sourdough. This is because the absence of gluten causes the dough to collapse after having doubled its volume.”

Days 7th to 10th – You should already have a very active and bubbling sourdough starter

During winter or in cold weather places it can happen that your sourdough is active but very slow. In this case, continue to refresh your sourdough at least once a day, ideally twice, for 3 or 4 more days until it becomes well active and doubles its volume in 4 hours approximately, at a room temperature of 20°C (68°F).

How to store and keep fresh

Once your sourdough starter is ready, you can use part of it as a leavening agent to bake breads or pastries. Always remember to save at least 50gr (2oz) extra to refresh and store for the next time you need it.

If you are planning to bake sourdough regularly during the week and keep your sourdough starter at room temperature, you should refresh it every day at least once a day so that it does not spoil. If you forget to do so and leave it for two or more days at room temperature, especially during summer time, it might get spoiled and you will need to throw it away and start over again.

If you're not going to use your sourdough starter regularly, you can store it in the refrigerator and refresh it at least once a week to keep it in good condition. Put a lid on the bottle where you are going to store it and add a tape with the date and the date when it is appropriate to refresh it so that you do not forget.

Whenever you would like to bake a sourdough, you will need to plan a little bit ahead of time since you need to take the sourdough starter out of

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the fridge at least a day or two in advance to make sure that it is refreshed enough times to make it super active and doubles in volume after three to four hours of being refreshed.

If you bake a loaf at least once a week, you will probably need just one or two refreshes to get your starter up to speed. On the other hand, if your sourdough starter has been in the fridge two or more weeks without being refreshed, it will probably take longer and more refreshes to get it well active again.

If a dark liquid appears on the surface of the sourdough after being in the fridge for a few days, do not worry, this is called “Hooch” and it is just an accumulation of residual alcohol, a byproduct of the fermentation process, it means the sourdough starter over fermented a little, but it is not a problem, you just have to discard the liquid and refresh the sourdough.