

Over the last few months several customs have enquired about gluten-free bread as they thought that they might be gluten intolerant. Not knowing anything about this topic I have done some research and in the following few paragraphs have tried to summarize what I have learnt.

### **What is gluten?**

Gluten is the gluey substance that remains behind when you wash away the starch from wheat flour. It is composed of two proteins. The first is called glutenin and this is responsible for providing the elastic properties of bread dough that allow it to rise. The second protein is called gliadin and this is responsible for the problems faced by people with gluten intolerance.

### **Which grains contain gluten?**

All the species of wheat (*Triticum* species) contain gluten, this includes spelt, khorasan (marketed as Kamut), einkorn and farro/emmer), barley, rye and triticale (a rye/wheat hybrid). Note that oats are free of gluten but are sometimes contaminated with wheat during growing and/or processing.

### **What is celiac sprue disease?**

When we eat bread the gliadin protein it contains is digested in the small intestine and the long protein molecule is chopped up into smaller and smaller chunks. A small section of the population have a genetic makeup that makes them sensitive to one particular chunk of the digested protein (section 31-43). In these people the auto immune defence system of the body mistakes this chunk of protein for a pathogen and attacks the cells of the intestine that have absorbed it. This results in serious damage to the lining of the small intestine.

### **What is non celiac gluten sensitivity (NCGS)?**

Some people notice symptoms such as diarrhoea, bloating, fatigue and irritable bowel syndrome that they feel is triggered by gluten in their diet. However tests for gliadin antibodies are negative and they are therefore not diagnosed as suffering from celiac disease.

### **What is a wheat allergy?**

A person with a wheat allergy can be sensitive to several proteins in wheat – not just gluten. It differs from celiac sprue in that a different set of autoimmune cells are involved and generally, an allergic reactions such as anaphylaxis is sudden whereas

the effects of an intolerance are longer term.

### **Why is gluten intolerance suddenly in the news?**

Over the last 50 years or so the incidence of celiac disease has increased from about 0.2% to 1% of the population. This has resulted in a number of best selling self-help diet books that blame the gluten in our diet for the increase in diagnosed cases and resulted in a multi-billion dollar industry supplying gluten free products.

In my opinion the increased rate of diagnosis is probably partly due to better healthcare and a heightened awareness of the disease by healthcare providers.

However I think that the root cause of the problem is due to the industrialization of the bread making process. In 1961 the British invented the Chorley-Wood process (<http://www.bbc.co.uk/news/magazine-13670278>) that allowed bread to be produced extremely quickly – and hence cheaply. It was a great commercial success and much of the bread consumed in the western world over the last 50 years has been produced in this way.

### **Why is sourdough bread better?**

In traditional bread making the natural yeasts and bacteria found on the surface of wheat are used to raise (or leaven) the bread. Unfortunately this process takes time and is therefore expensive. The advantage of the traditional slow fermentation lies in the fact that the yeasts and bacteria have time to pre-digest the gliadin in the bread dough, chopping it up into chunks that are so small that they do not irritate the small intestine. A research group at the University of Bari in Italy have published a series of papers that document this effect:

(<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1932817/>) and show that long fermentation can render a bread made from wheat safe for those with celiac disease.

### **I think I have non-celiac gluten sensitivity - can I eat sourdough bread?**

I suggest that you try it in a controlled way. Exclude gluten from the usual sources such as pasta, cereals, crackers etc and consume a small amount of sourdough bread and see how you feel. Note that many commercial “sourdough” bread products are created by adding a souring chemical to regular dough. Purchase your sourdough

bread bread from an artisan baker for the real thing – don't be afraid to ask how they make their bread!

### **I have been diagnosed with celiac sprue – can I eat sourdough bread**

No. While these Italian trials indicate that sourdough bread made from wheat can be safe for people diagnosed with celiac sprue they were conducted under carefully controlled laboratory conditions and these are difficult to reproduce in a bakery. You should continue to observe a gluten free diet.

### **Disclaimer**

**I am not a medical professional, please do not alter your diet based on these notes. If you have concerns about the presence of gluten in your diet please consult a qualified doctor of medicine**