

Whole Grain Connection Newsletter #20

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Protecting the stomach with soluble plant proteins

In "What's with Fiber?" we were thinking of the micronutrients associated with dietary fiber in the bran and germ of whole grains: B-vitamins, minerals, vitamin E, antioxidant polyphenolics, carotenes and many other phyto-nutrients as yet to be discovered. Now I realize that we should have written about the macro-nutrient protein, especially the water-soluble protein associated with the bran and germ of grains, and also associated with the dietary fiber in roots such as sugar beet, and in sugar cane juice.

It is amazing to realize that 25% of the total wheat grain protein is in the combined bran, germ and aleurone layer; with approximately half of that protein in the aleurone and the other half in the germ and bran. None of this protein is considered useful in creating bread structure. Only the relatively insoluble gluten proteins in the endosperm have the ability to create bread structure. The refining of grains, results in the removal of bran, germ, and some aleurone together with this associated protein. Thus, if the whole wheat grain protein is 12%, then the level of protein in the refined endosperm flour will be only 9%, or 10.5% if the aleurone layer is included. This seeming paradox is due to the fact that these outer parts of the grain are very much richer in protein than the endosperm. The germ and aleurone are each composed of more than 20% protein.

Similarly, in the production of refined sugar from sugar cane, or from sugar beet, the protein associated with the fibrous plant cell walls is completely removed. Only now have I learned that much of this soluble protein is valuable as an aid to stomach health, and the prevention of peptic ulcers. Whenever a high carbohydrate food is eaten, the stomach produces a generous burst of hydrochloric acid to assist with its proper digestion. The acidic effect goes un-moderated if the carbohydrate is refined. But if there is an accompanying amount of soluble protein associated with the un-refined food, it acts as a buffer to the acidity. This allows digestion as intended, but importantly the buffering protein protects the stomach wall. My reference is by TL Cleave (*The Saccharine Disease*, 1975) Also, this makes me realize that dietary fiber alone, is unlikely to be capable of preventing peptic ulcers, but the water-soluble proteins in the whole grain, are likely to have this capability.

I studied this anew because the story from my hiking friend yesterday was about a husband and father of three teen-agers, who had recently died at the age of 58 very soon after being diagnosed with stomach cancer. As always, we ask how could this tragedy have been prevented? Personally, I was more fortunate. My own father had a perforated duodenal ulcer and nearly died while he was a very young man. This was in the 1930s before the enrichment of refined flour. The realization that he had been so ill that he almost died was a constant in our lives, as a typical family of the time with a stay-at-home mother. Even so, he still died at the too young age of 61 from colon cancer. There is more, he used to keep a bottle of hydrochloric acid in the pantry to dilute and swig after every meal, because

they had surgically removed so much of his stomach. He also had been advised by his physician as an aid to digestion, to drink Marmite® as a source of B-vitamins that were lacking in the white flour of the time. *Marmite® is a brand of autolyzed yeast extract that is sold as a flavoring for soups and stews, but which is also a good source of B-vitamins.* He drank it diluted in hot water as a savory beverage. Actually, we all developed a taste for this Marmite®, either as a beverage or thinly spread on buttered toast for breakfast. We three children all knew why it was particularly used in our house. We knew about the B-vitamins that had been removed from flour. I'm not sure that children now, learn about the history of vitamins and their discovery, which was precisely the result of refining grains. In fact, all this is why I take such an intense interest in whole grains, and also having had the unusual chance to study this with my husband, Gene Spiller. I now appreciate that the prevention of these disasters is right there with a lifelong habit of eating grain foods whole and avoiding refined sugar. I realized that my mother's robust Swedish family had grown up on whole grain rye bread, whereas my father had grown up in a family eating the whitest bread possible. Our bread at home in the 1950s was Hovis® (*containing stabilized wheat germ*), Ryvita (*Rye crispbread*) and a local baker's white pan bread. We were still far from the ideal of eating all grain foods 100% whole and avoiding refined sugar.

Recent literature on the causes and treatment of peptic ulcers on www.pubmed.gov is focused on combatting the bacteria *Helicobacter pylori* which was implicated in 1983 as a cause for peptic ulcers and cancers. These bacteria are widely found in people, yet only some ever experience peptic ulcers or stomach cancer. The drug regimens that are now used against these bacteria as a treatment for peptic ulcers, seem to be effective but cause unpleasant side effects. Surely it would be better not to have these ulcers happen at all, by eating whole grain foods and avoiding refined carbohydrate foods, as suggested by Cleave. Recent articles rarely give details for a diet that might alleviate the suffering. Even so, I did find an article that confirmed the logic put forth by Cleave: [an experimental diet](#), used to promote the formation of stomach ulcers in pigs consists of refined corn starch with only very small amounts of protein. I also read that probiotic fermented foods might be useful in reducing the effects of the *Helicobacter pylori*, and indeed they would seem to be obviously helpful.

Once again, I ask: *How is it that the huge and powerful milling and baking industries of the Western world continue to provide us with refined flours and refined sugars as our basic foodstuff, and even when they no longer enrich white flour with vitamins they do so without any warning label? Where is support for the alternative track via organic agriculture and leading to 100% whole grain end-products?*

Bread Nutrition Facts Calculator

The Nutrition Facts table design has changed this year. Here is a calculator made for you, so that you can [prepare your own Bread Nutrition Facts tables](#). The initial purpose for building this calculator in Microsoft Excel was to generate the values for a label on 100% whole grain sourdough bread. As development proceeded I saw that a calculator could serve the professional baker and also the home baker

in other ways than the original intention: by estimating the nutritional value of a test formulation.

Another rebuttal to William Davis and his book: "Wheat Belly"

This rebuttal was written for a friend who had only recently read William Davis' "Wheat Belly" for the first time and was really alarmed. Perhaps like me, you are still meeting people who are aghast at the words of William Davis in his book "Wheat Belly", which was published in 2011. Many others have written rebuttals, but in desperation I wrote yet another. [Here it is](#) for you to use as you wish when you too are asked whether you agree with William Davis.