

Q. I am wondering whether the enzymatic action of *phytase* occurs in stone ground wholemeal flour when in contact with water, during the making of pasta for example?

A. There is every reason to expect that practically all the enzymes including *phytase* remain in whole wheat flour after milling, provided the milling was cool and no separations of the fractions in whole wheat flour occurred. Thus, stone ground whole wheat flour produced in a single pass, likely contains all the *phytase* originally present in the whole grain seed. Evidence that the enzymes, including *phytase*, are activated during the production of pasta was found in the sweet taste that I experienced in my own pasta making experiments. The enzyme amylase (also known as *diastase*) liberates sugars from the starch, and my pasta was distinctly sweet tasting. The only ingredients were whole wheat flour and water. The total time that the whole wheat flour was wet, from the time the dough was made until the pasta was dry, was 2-3 days. This would be like sprouting grain for 2-3 days, which gives the *phytase* plenty of time to increase in quantity and to break down most of the phytates, so releasing a good supply of minerals. I even experienced some sweetness initially in the fresh pasta, approximately 10 hours after making the dough.

Phytate is actually a favorable nutrient and has been recognized as anti-cancer; it seems only to be problematic when the diet is limited to grain foods only, and when those grains are made into bread or pasta so rapidly that there is no opportunity for full hydration of the whole wheat flour, nor for the action or enhancement of any enzymes such as the *phytase* that allows mineral release from phytates.