

## Dietary Fibers

Each year a complete nutritional analysis is carefully performed on a representative sample of the entire crop. Additionally, Kamut International is about to begin a research project to study the content of dietary fibers in KAMUT<sup>®</sup> khorasan wheat and how to optimize manufacturing processes to retain the dietary fibers in finished products (**Integrated study for the evaluation of KAMUT<sup>®</sup> khorasan wheat functional properties**). Preliminary tests suggest that KAMUT<sup>®</sup> khorasan wheat contains 2-2.5 times more resistant starch than other durum or soft wheat. As a result, this research is narrowly focused on the resistant starch fraction of KAMUT<sup>®</sup> khorasan wheat.

Functional food is the new frontier regarding healthy food and prevention of disease. Functional food means a type of food which, through regular consumption, is able to give a health benefit in terms of treatment and prevention of specific diseases or unhealthy conditions.

Resistant starch (RS) is a type of starch that escapes digestion in the small intestine. It is considered the third type of dietary fiber, as it can deliver some of the benefits of insoluble fiber and some of the benefits of soluble fiber. Some carbohydrates, such as sugars and most starch are rapidly digested and absorbed as glucose into the body through the small intestine and subsequently used for short-term energy needs or stored. Resistant starch, on the other hand, resists digestion and passes through to the large intestine where it acts like dietary fiber.

Many public health authorities and food organizations such as the Food and Agricultural Organization, the World Health Organization, the British Nutrition Foundation and the U.S. National Academy of Sciences recognize resistant starch as a beneficial carbohydrate. Substantial research of natural resistant starches from high amylose corn indicates benefits in intestinal/colonic health as well as metabolically important benefits in glycemic management and energy. Consumption of foods containing natural resistant starch positively affects weight management in three ways.

*Fiber fortification:* Natural resistant starch increases fiber content without affecting taste or texture. In 2003, the World Health Organization concluded that dietary fiber is the only dietary component that had convincing evidence of a protective effect against weight gain and obesity.

*Calorie reduction:* Resistant starch lowers the caloric content of foods when it is used to replace flour or other rapidly digested carbohydrates. Natural resistant starch delivers between 2-3 kilocalories/gram (8-12 kilojoules/gram) versus 4 kilocalories/gram (16 kilojoules/gram).

*Lipid oxidation:* Resistant starch helps burn fat and may lead to lower fat accumulation. A recent clinical trial with high amylose corn resistant starch showed that it increased fat oxidation after a meal. It also changed the sequence in which the body burns food, with fat burning being placed at the top of the list relative to carbohydrates and protein. These findings suggest a possible metabolic effect of resistant starch that may impact body weight.