



HEALTHGRAIN

EXPLOITING BIOACTIVITY OF EUROPEAN CEREAL GRAINS FOR IMPROVED NUTRITION AND HEALTH BENEFITS

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Rye and barley products facilitate blood glucose and appetite regulation

Evidence from observational studies indicates that diets rich in whole grain reduce risk of obesity and other diseases related to the metabolic syndrome e.g. type 2 diabetes and cardio-vascular disease. The mechanisms involved are only partially elucidated. Work within HEALTHGRAIN has revealed novel insights regarding some potential mechanisms.

Barley products rich in indigestible carbohydrates (dietary fibre and resistant starch), facilitated glycaemic regulation through a mechanism involving fermentation by gut micro-organisms. Fermentation was associated with release of specific gut hormones (GLP-1), with acknowledged benefits on a variety of parameters associated with reduced risk of the metabolic syndrome, including benefits on perceived satiety. GLP-1 is currently investigated for use as an antidiabetic, antiobesity drug, but appears to be produced endogenously in healthy subjects after intake of certain whole grain barley products rich in indigestible carbohydrates. Addition of whole grain barley products with slow glycaemic response and rich in dietary fibre and resistant starch in test meals significantly improved insulin sensitivity in type 2 diabetic subjects as compared with whole grain wheat or white wheat.

Additionally, rye products generally produce a beneficial blood glucose profile following a meal, with a low and sustained blood glucose response. Rye products also induced lowered insulin response compared with white wheat, promoted higher post-meal satiety, and induced lowered voluntary energy intake at a subsequent meal. Studies within HEALTHGRAIN indicate that different rye genotypes vary with respect to benefits on glycaemic regulation and insulin demand.

The results are in favour of metabolic benefits of an increased consumption of in particular whole grain barley products with low glycaemic response, and foods made of certain rye varieties. The results provide tools for tailoring of whole grain cereal products with magnified health benefits adjunct to the metabolic syndrome.

The EU Integrated Project HEALTHGRAIN

The HEALTHGRAIN project has substantially strengthened the scientific basis for a new generation of cereal based products with enhanced health benefits. The project also has formed a network of research organizations, industries and organizations communicating to consumers that will continue as the HEALTHGRAIN Forum.

*Results of the project will be presented in
the HEALTHGRAIN Conference on May 5-7 in Lund, Sweden:
www.healthgrain.org*



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Food-related nutritional research is carried out with the aim of gaining an understanding of how the composition and properties of food affect the health of the consumer. Special interest is being focused on the possibility of optimising the nutritional content and health-promoting properties in general through the selection of raw materials and processes in the production of foodstuffs. A particular focus is on the quality characteristics of carbohydrates and proteins, and on the possible link between the gut microbiota and host metabolism. Within the subject of food chemistry, reactions are being studied in the handling, storage and processing of foodstuffs. Great importance is afforded to the development of new and specific methods for food analysis. One of our most important projects is concerned with the changes in dietary fibre during processing. Another central area is the study of the Maillard reaction in relation to safe food, i.e. the production of carcinogenic substances during the heating of food, and their effects. www.appliednutrition.lth.se

Key References:

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