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## **Engineering wheat arabinoxylan for new applications**

**Arabinoxylan, the major dietary fibre component of wheat bran, is important both from the technological and nutritional point of view. New enzymatic technologies were developed in the HEALTHGRAIN project to partly and selectively degrade arabinoxylan. The results offer potential for a new soluble fibre ingredient based on wheat bran.**

The health benefits of cereal fibre, in particular in the prevention of lifestyle diseases such as diabetes, obesity, cardiovascular diseases, and cancer, are today generally recognized. Authoritative dietetic associations all around the world recommend consumption of cereal based products containing bran and fibre over products prepared from refined cereals. Arabinoxylan is the major dietary fibre component of both wheat and rye. It thus offers many possibilities for new ingredient manufacture.

Xylanase enzymes offer an efficient and specific tool to solubilise arabinoxylan polymers, and further to produce short-chain arabinoxylan oligosaccharides (AXOs). New xylanase enzymes were identified and characterized to have specific activities, and also to operate in the high temperature conditions during baking. One approach was to enzymatically solubilize AXOs *in situ* during the breadmaking process. An enzymatic process for AXOs production has already been developed ([www.fugeia.be](http://www.fugeia.be)). Furthermore, extensive ball milling was shown to degrade arabinoxylans, offering tentative new possibilities for AXOs design.

A major feature of AXOs is that, in the colon, they are fermented to short chain fatty acids in general and butyric acid in particular. Butyric acid is important for the large intestinal mucosa cells. Arabinoxylan and AXOs are also known to be bifidogenic, ie they promote the growth of Bifidobacterium in the gut. The potential antioxidant power of AXOS deserves further studies.

### **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](http://www.healthgrain.org)*

### **Katholieke Universiteit Leuven**

The KU Leuven carries out fundamental and applied research in all academic disciplines with a clear international orientation. Our annual research expenditures are around 230 million euro (exact sciences account for 44%, biomedical sciences for 30%, humanities for 19%, and interfaculty institutes for 7%); our scientific staff counts over 5,300 researchers, including 1,800 senior researchers, 10% are international scholars, up to 30% in the most advanced research domains. Applied research is supported by the well-experienced K.U.Leuven Research & Development, one of the most prominent technology transfer offices in Europe. For a short overview of main facts & figures:

<http://www.kuleuven.be/english/about>.



HEALTH GRAIN

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

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**Key references:**

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