

## Editorial

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This special issue of QAS is dedicated to dietary fibre, based on the scientific discussions and outcomes of the 4th International Dietary Fibre Conference. DF09, Vienna, 1–3 July 2009, which was organized by ICC – The International Association for Cereal Science and Technology (<http://www.icc.or.at>). ‘Dietary Fibre – new frontiers for food and health’ was used as a catchphrase to describe this Conference. With the adoption – after decades of debate – of almost identical definitions of dietary fibre by Codex Alimentarius and the European Union – an old frontier has been crossed. DF09, with over 300 attendees from 38 countries, effectively explored new challenges for dietary fibre research.

The analysis of dietary fibre, according to the new definition, is one of these challenges because until now the heterogeneous classes of substances of the fibre family could only be analysed by combining a number of methods and taking care to avoid duplication. In this QAS issue, papers from DF09 analytical presentations are published, including an outline of an all-in-one method for determining total dietary fibre. The new fibre definition includes resistant starch and low molecular weight oligosaccharides, compounds only partially determined with the currently most commonly used method for fibre determination: AOAC Method 985.29. One paper shows the higher values for total fibre obtained for bread when all fibre compounds are measured correctly. This indicates that food composition tables worldwide have to be revised regarding the fibre content of many food products.

The new definitions require for any fibre added to food products *to have a physiological effect of benefit to health as demonstrated by generally accepted scientific evidence to competent authorities*. Criteria for providing evidence have not yet been set, but in DF09 a considerable number of papers demonstrated the use of the advanced genomics-related multi-analysis toolboxes. These toolboxes are providing new possibilities for finding needles in haystacks – for example, which prebiotic molecules in a complex mix stimulate the growth of specific bacteria from the thousands of different colonic bacteria, or for finding relationships between fibres and their co-passengers on the one hand, and

markers for inflammatory activity on the other hand. These techniques will increasingly provide tools for establishing structure–function relationships for underpinning the evidence of health benefits. Well-known health benefits of different types of fibre include laxation, intestinal health, promotion of the growth of beneficial colonic bacteria, lowering of cholesterol levels, slowing down the glycaemic response and reducing the risk of cardiovascular diseases. DF09 highlighted also more recently researched benefits related to promotion of satiety, to the immune system and to stress factors.

In addition to the presentations on molecular structure and the health benefits of oat  $\beta$ -glucans, for the first time in the DF conference history the health benefits of the main type of fibre in wheat and rye, arabinoxylans were highlighted, as well as the prebiotic effects of arabinoxylan oligosaccharides. Other grain fibre presentations included the wide variations in levels of fibres and co-passengers in 200 varieties of wheat and other cereal grains – a massive piece of work accomplished in the Healthgrain project (<http://www.healthgrain.org>) and the importance of high fibre levels in whole grain products – for exerting their beneficial contribution to a healthy heart.

From the perspective of fibre, nutrition and health a major challenge is increasing the currently far too low fibre intake in the industrialized world, preferably with combinations of fibres and products effectively addressing major health and well-being-related issues. Topics discussed in DF09 included those mentioned above and others such as technologies for concentrating natural fibres and for improving sensory properties of high fibre and low glycaemic products; essential elements for addressing this challenge.

I hope you will enjoy this special issue of QAS on dietary fibre characterization and analysis and find useful contributions for your fields of expertise!

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