



HEALTHGRAIN FORUM SESSION

FENS 2019 | DUBLIN/IRELAND | 15-18. OCT

13th European Nutrition Conference, Federation of European Nutrition Societies (FENS) 2019

Improving Diet Quality With Whole Grain and Cereal Fibres

- **The role of whole grain in improving diet quality**
Professor Chris Seal Newcastle University (UK)
- **Impact of processing and sprouting on whole grain products**
Professor Christophe Courtin University of Leuven (BE)
- **Effects of whole grain intake on microbiome composition**
Professor Koen Venema Maastricht University (NL)

Chair: Dr. Jan de Vries Nutrition Solutions (NL)

Find us on

TUESDAY 15 October

15:00-16:30

Wicklow Hall 2A

Endorsed by





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The role of whole grain in improving diet quality

Professor Chris Seal, Institute of Cellular Medicine, Newcastle University (UK)

Whole grain flours and whole-grain foods made from them are actively promoted as part of a healthy, sustainable diet profile based on higher intakes of plant-based foods and lower consumption of meat and animal products. This is supported by strong evidence showing that higher consumption of whole grain is associated with lower incidence and mortality from cardiovascular diseases, type 2 diabetes, and some cancers. Whole grain flours are more nutrient dense than refined (white) flours because they retain the bran and germ fractions of the grain which are separated from the starchy endosperm during the manufacture of refined flours. The bran and germ contribute a range of nutrients including vitamins, minerals, phytochemicals (mostly polyphenolics) and dietary fibre, so any food made with whole grain as a principal ingredient in place of refined flour will be richer in these nutrients. Individuals who consume larger amounts of whole grain are more likely to achieve recommended intakes of micronutrients and especially dietary fibre because the overall quality of the diet is improved. Consuming whole grains may not be the full explanation for the improved health outcomes observed because people who consume whole grains tend also to follow a healthier lifestyle in general, including smoking less and being more physically active. Current whole grain intakes are universally lower than current recommendation; one recent high profile review suggesting that a daily target should be 235g of whole grain per day. As a result there needs to be a concerted effort to increase whole grain intakes of all populations and so building robust, evidence-based dietary guidelines should be a priority for health agencies globally, as well as clear guidance for population on how to select healthful whole grain products.



Impact of processing and sprouting on whole grain products

Professor Christophe Courtin, University of Leuven (BE)

Cereals in general and wheat in particular have to be processed to make them ready for consumption. The first transformation is milling of the grain, involving size reduction and/or refinement. With the second transformation, we turn the milled cereal into an edible product. With a focus of industry and science on transformation technology and safety, very often, the consequences of processing for the health aspects of the final product, positive or negative, are overlooked. Such knowledge can, however, help to steer processing to match technological and nutritional needs. It can furthermore provide additional counterweight to tackle the increasing demonization of processing for the production of cereal foods. This topic is discussed in this review paper and is illustrated by several case studies, including one on sprouting of cereals.



Effects of whole grain intake on microbiome composition

Professor Koen Venema, Maastricht University (NL)

The gut microbiota has been shown to be involved in health and disease, ranging from diseases in the gut, to disorders such as obesity, allergy, and even autism. The composition and activity of the gut microbiota can be modulated using diet(ary components), such as undigestible carbohydrates/ prebiotics or bioactive molecules in whole grains, which can affect the gut microbiota. In particular, whole grains provide dietary fiber (DF; non-starch polysaccharides and resistant starch), which constitute important sources of nutrients for the gut microbiota and contribute to a healthy gut microbiome. One of the metabolites produced by the gut microbiota upon fermentation of DF is the short-chain fatty acid butyrate. Amongst others, it is the most important energy source of the colonic epithelium, and a lack of butyrate leads to epithelial atrophy. Moreover, butyrate is believed to prevent colon cancer by inducing differentiation of transformed cells. It has been known for a long time that particularly resistant starch leads to the production of high amounts of this health beneficial butyrate. Also, (poly)phenolic compounds present in (the kernel of) whole grains are beneficial. Apart from their antioxidant activity, they are usually poorly absorbed and reach the colon, where they are metabolized by the gut microbiota into all kinds of more simple phenolic compounds, each with their own (potential) health benefit. The composition of these constituents (DF and antioxidants) is unique and differs from one whole grain to another. This contribution will provide an overview of the current status of the benefit of whole grains on host health through the gut microbiota.