Does wheat make us fat and sick?

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Researchers from the Department of Human Biology, Health Food Innovation Management, Maastricht University, the Netherlands, and the Plant Biology and Crop Science group of Rothamsted Research, UK, concluded from their review of the scientific literature that the alleged adverse effects of wheat consumption on human health, caused by mechanisms related to eating behaviours, could not be substantiated. On the contrary, whole-wheat consumption has been associated with significant reductions in risks for type 2 diabetes, heart disease, and improved long term weight management. The findings clarify some recently heard misconceptions concerning the consumption of wheat appearing in media, and were published in the Journal of Cereal Science.

Wheat grain comprise three major components, starch (50-60%), proteins (10-13%), and cell wall polysaccharides (dietary fibre, 10-15%), and a range of minor components that may confer benefits to human health. Importantly, in order to declare ‘whole grain’ as an ingredient, these three major components need to be present in the same relative proportions as they exist in the intact kernel (see definition of ‘whole grain’). Wheat is the most widely cultivated cereal and is third in total global production, behind maize and rice. About 95% of the global wheat production accounts for bread wheat and most of the remaining 5% of the crop is durum wheat (also called pasta wheat). Small amounts of wheat breeds like einkorn, emmer, and spelt are grown mainly for the demand of specialist health foods.

In their review of the scientific literature, the authors address the debate around wheat consumption and health. Several popular dietary trends, such as the Paleolithic Diet, or the proposal of the American cardiologist W.R. Davis in his recent book Wheat Belly (2011), suggest that wheat consumption has adverse health effects. These alleged adverse effects include for example that wheat starch would be different to starch from other sources like bananas, potatoes and vegetables, and therefore easily converted to raise blood sugar, or that wheat would induce addiction-like eating behaviour, ultimately leading to obesity. The multifactorial causation of obesity is often lacking in these debates, while attributing the development of obesity to one single food or food component.

The authors point to the fact that, historically, there have been populations, such as the Turkish, that consumed wheat products as the main source of energy for centuries, without people gaining weight. Adding to this, the increase of obesity has also occurred in populations that eat little wheat, such as several Asian countries. Moreover, whole grain consumption has been associated with reduced risk of type 2 diabetes, cardiovascular disease, some types of cancer, as well as a more favourable weight management. Therefore, the authors state that wheat should only be avoided by individuals with coeliac disease (autoimmune disorder to gluten, affecting about 1% of the population of Europe and the U.S.) or by those who are sensitive or allergic to wheat proteins (affecting about 5-10%). Gluten proteins account for up to 80% of the total grain protein, and have structural, metabolic, or storage functions.

A number of common misconceptions were considered and addressed by the authors such as “the proliferation of wheat products parallels the increase in waist size”, which cannot be substantiated based
on published scientific studies. It is a misinterpretation of a correlation between two variables having a causal relationship; obesity rates have increased in parallel with an increase in wheat consumption, but there is no causal relationship between the two. Another example is “wheat opioids are so addictive that they cause people to be unable to control their eating, and removal of wheat from the diet causes withdrawal.” There are again no data to substantiate the statement; this misperception is based on the observation that an incomplete digestion of gliadin (a fraction of gluten protein) has been shown to release a peptide, called gliadorphin, which causes acute behavioural changes when infused in the bloodstream of rats. However, gliadorphin, as such, cannot be absorbed by the intestine.

The authors conclude that although adverse effects of wheat on some individuals must not be ignored, the consumption of whole grain generally exerts positive effects on health. Those with gluten sensitivity or coeliac disease would benefit from food products that do not contain gluten related proteins, but are made from crops such as teff, amaranth, oat, quinoa and chia. Replacing refined foods with an increased consumption of whole grain products could be recommended to the general public.

For further information please see: