

The importance of fruits and vegetables in healthy nutrition

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Food-based dietary guidelines around the world emphasize the importance of fruits and vegetables in healthy nutrition. Results of a systematic review on the preventive potential of fruits and vegetables for several chronic diseases came to the conclusion that there is convincing evidence that fruits and vegetables can reduce the risk for stroke, hypertension and coronary heart disease. (Boeing et al 2012). Furthermore, there is evidence that their consumption can probably reduce the risk for cancer. Despite the health benefits associated with fruits and vegetables, consumers neither in Germany nor in China meet the recommendations of five portions per day. In China dietary habits amongst other things is in a transition phase. The development is a bit worrying, as a steady decline in the intake of fruits and vegetables is observed.

In order to understand the health-promoting potential of fruits and vegetables, it is important to have a look at their constituents, especially dietary fiber and phytochemicals e.g. polyphenols. The importance of dietary fiber for human health has come into focus during the last couple of years, with the increased interest in the gut microbiota. Fermentable dietary fibers are substrates for bacterial metabolism in the colon. Short-chain fatty acids, which are products of microbial fermentation, have been associated with a variety of health effects, e.g. anticarcinogenic potential. Similar to dietary fiber, phytochemicals are a very diverse group of substances that can promote various health-promoting effects such as anticarcinogenic, antioxidative or cholesterol-lowering.

The anticarcinogenic potential of a phytochemical- and fiber-rich cloudy apple juice, compared to clear apple juice, that contained less fiber or water has been investigated in a colon cancer model using rats at MRI. Rats receiving the cloudy apple juice had lower levels of DNA damage and reduced size of aberrant crypt foci compared to both water and clear apple juice, indicating an anticarcinogenic potential of the cloudy apple juice. These results have been confirmed in a human intervention study, where participants ate one kilogram of apples and DNA damage in peripheral mononuclear blood cells was assessed. Consumption of apples reduced oxidation of pyrimidines and prevented iron chloride induced DNA strand breaks, indicating a better protection of DNA damage. In Summary the results of both studies indicate a protective effect of regular apple or apple juice consumption for DNA damage and cancer.

Collectively, there is convincing evidence that regular consumption of fruits and vegetables plays a pivotal role in disease prevention. Therefore ways to increase fruit and vegetable intake in China and Germany are need to be found.

Literature:

Boeing et al 2012: Critical review: vegetables and fruits in the prevention of chronic diseases. European Journal of Nutrition; Volume 51, Issue 6, pp 637–663