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Impact of processing methods on metabolic profile and nutritional value of Sorghum

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Sorghum is one of the world's oldest cultivated crops and is an important staple food source in many Sub-Saharan African countries. It is well adapted to low input agricultural systems and provides a valuable source of starch, protein and bioactive compounds to local diets. However, sorghum requires significant water and labour-intensive pre-processing methods in order to make the nutrients bio available for human nutrition. The project aimed at comparing the effect of different processing conditions on the metabolic profile and nutritional value of different sorghum cultivars sourced from Uganda and Nigeria. Purified grain samples were milled and subjected to traditional fermentation, microwaving or boiling, in order to produce sorghum porridge. Starch digestibility, bioactive content, as well as antioxidant activity were analyzed as indicators of potential health effects. Overall, the bioactive content was largely dependent on the country of origin and the grain pigmentation, being significantly higher in red pigmented varieties as well as in Ugandan cultivars. Bioactive levels in fermented porridge samples were markedly higher compared to the porridge resulting from boiling and microwaving. Furthermore, microwaving did not appear to increase starch digestibility when compared to boiling whereas the effect of fermentation on the digestion of starch was largely dependent on the particle size of the grain flour. Present results do not support the hypothesis that microwaving is superior to traditional fermentation methods. Ongoing research addresses the aspect of trace element availability under the different processing conditions.

Biography

Christine Bosch is a Lecturer in Nutrition at the University of Leeds. She has a strong interest in nutrition related research with focus on the health promoting effects of dietary antioxidants and their mechanism of action in the context of oxidative stress, inflammation and related disorders. She has published more than 40 peer reviewed papers in the field. She has held appointments at the Universities Kiel and Giessen (Germany) and has been awarded a Humboldt Fellowship (2010-2012) for a research stay at Newcastle University (UK).

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