Consumption of organic diets does not affect intake and absorption of zinc and copper in men—evidence from two cross-over trials - DTU Orbit (18/12/2018)

Consumption of organic diets does not affect intake and absorption of zinc and copper in men—evidence from two cross-over trials

Agricultural methods may affect the nutritional composition of plants and cause complex changes in the food matrix. Whether this affects the dietary absorption of minerals that are important for maintaining health through life remains unclear. We compared the effects of organic and conventional diets on intake and absorption of zinc and copper in men. Two double-blinded, cross-over, intervention trials (3 dietary periods of 12 days with 2-week-long wash-out) were performed in 2008 (n = 17) and 2009 (n = 16) in young men. The diets were based on 9 crops grown in rigidly controlled organic and conventional systems in 2 replications over 2 years. The primary outcomes were intake and absorption of zinc and copper. The absorption was determined by faecal excretion of stable enriched isotopes extrinsically added to the entire menu. Within each year, the intake and absorption of zinc (overall mean ± SD; 12.35 ± 0.47 mg per 10 MJ and 44.6% ± 12.1, respectively) and copper (overall mean ± SD; 2.12 ± 0.28 mg per 10 MJ and 41.2% ± 13.2, respectively) were not different between the organic and conventional diets. The growing season had no effect on zinc intake and absorption, but the copper intake was higher (P = 0.01) and absorption lower (P <0.005) in 2008 compared with 2009 (overall mean absorption ± SD; 35.3% ± 13.5 in 2008 and 54.0% ± 10.7 in 2009). In conclusion, organic agriculture does not affect the intake and absorption of copper and zinc in men. Consequently, it does not seem to promote the health beneficial role of these minerals in vivo. This journal is © 2013 The Royal Society of Chemistry.

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