Effects of diets based on foods from conventional versus organic production on intake and excretion of flavonoids and markers of antioxidative defense in humans

Different food production methods may result in differences in the content of secondary metabolites such as polyphenolic compounds. The present study compared conventionally (CPD) and organically produced (OPD) diets in a human crossover intervention study (n = 16) with respect to the intake and excretion of five selected flavonoids and effect on markers of oxidative defense. The urinary excretion of quercetin and kaempferol was higher after 22 days of intake of the OPD when compared to the CPD (P <0.05). The excretions of flavonoids in urine as a percentage of intake (0.6-4%) were similar after both interventions. Most markers of antioxidative defense did not differ between the diets, but intake of OPD resulted in an increased protein oxidation and a decreased total plasma antioxidant capacity compared to baseline (P <0.05). Some varietal difference was seen in the study, and because selection of more resistant varieties is of central importance to organic farming, it cannot be excluded that the observed effects originate from these differences. The food production method affected the content of the major flavonoid, quercetin, in foods and also affected urinary flavonoids and markers of oxidation in humans.

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