2

Effects of multivitamin/mineral supplementation, at nutritional doses, on plasma antioxidant status and DNA damage estimated by Sister chromatid exchanges in lymphocytes in pregnant women

Eunju Park[1]*, Myung-hee Kang[2], Ibrahim Elmadfa[1], [1]Institute of Nutritional Science, University of Vienna, Austria, [2]Department of Food and Nutrition, Han Nam University, Taejon

The purpose of this study was to evaluate the effect of multivitamin/mineral supplementation during pregnancy on plasma levels of antioxidants and Sister chromatid exchange (SCE) rate - an indicator of damage to DNA. A controlled, semi-randomized, prospective trial was performed comparing the supplement group, who received multivitamin/mineral tablet once daily for 10 weeks, to the control group. Plasma levels of antioxidants and SCE in lymphocytes were measured initially (20 wk gestation) and at the end of the intervention (34 wk gestation). In the control group, SCE rates increased significantly at 34 wk gestation compared to 20 wk gestation, whereas there was no change in the supplement group. Plasma retinol, beta-carotene and ascorbate decreased significantly in the control group. In the supplement group, a significant increase in plasma beta-carotene (55.6%), coenzyme Q10 (40.2%), folic acid (15.9%) and zinc (24.2%) was observed after 10 weeks of supplement. Increased plasma levels of antioxidants in the supplement group could not decrease SCE rates, however, they could prevent an increase in SCE rates which may be induced by reactive oxygen species generated from the enhanced steroid hormones in the last trimester, suggesting that multivitamin/mineral-supplement during pregnancy may prevent DNA damage due to the altered hormonal profile.