Maternal intake of antioxidant vitamins in pregnancy in relation to maternal and fetal plasma levels at delivery.

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OBJECTIVE: The aim of the present study was to test the hypothesis that maternal intake of antioxidant vitamins is associated with maternal and cord plasma levels at delivery.

METHODS: Women were recruited in early pregnancy in Aberdeen Maternity Hospital and habitual diet during pregnancy was assessed by a food-frequency questionnaire mailed at 34 weeks gestation. Blood samples were taken at recruitment (n 1149) and maternal (n 1149) and cord blood samples (n 747) taken at delivery for analyses of vitamins A, C, E and beta-carotene.

RESULTS: Maternal plasma levels of vitamin E and beta-carotene at delivery were significantly higher than levels in early pregnancy while levels of vitamins A and C were significantly lower. Positive correlations were observed for maternal levels of all the vitamins between early pregnancy and delivery. At delivery, maternal plasma concentrations of vitamins A, E and beta-carotene were significantly higher than cord levels, while maternal levels of vitamin C were significantly lower. There were significant correlations between maternal and cord plasma concentrations for beta-carotene and vitamin C but not for vitamins A or E. Maternal dietary intakes were positively correlated with maternal plasma levels of vitamins C, E and beta-carotene in early pregnancy, with maternal plasma levels of beta-carotene and vitamin C at delivery and with cord plasma levels of beta-carotene and vitamin C.

CONCLUSIONS: The results from the present study show that, in this population, maternal diet influences cord plasma levels of beta-carotene and vitamin C, but not vitamins A and E.