

Abstract

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Relationship of plasma carotenoids, retinol and tocopherols in mothers and newborn infants.

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OBJECTIVE: We studied the relationship between maternal and cord plasma concentrations of carotenoids, retinol, and tocopherols in normal mother-baby pairs.

METHODS: Healthy pregnant women (n = 10) were recruited at a Montréal hospital. Venous blood samples were collected from the mothers at delivery and cord blood was obtained immediately post partum from the umbilical vein after clamping of the cord. All deliveries were full term deliveries and all babies had normal birth weights. Maternal and umbilical cord blood samples were handled identically. Plasma was digested with lipase and plasma carotenoids were extracted and measured using HPLC.

RESULTS: Cord plasma concentration of carotenoids were significantly lower than that of maternal plasma ($p < 0.001$). There was a high correlation of lutein ($r = 0.889$, $p = 0.006$) and cryptoxanthin ($r = 0.912$, $p = 0.0002$) between maternal plasma concentrations and cord plasma concentrations. The concentrations of the hydrocarbon carotenoids, alpha-carotene and beta-carotene, were also correlated ($r = 0.779$, $p = 0.0133$, & $r = 0.782$, $p = 0.0076$, respectively) between maternal plasma and cord plasma. Whereas the plasma concentration of the acyclic carotenoid, lycopene, showed no correlation between the two groups, after adjustment for plasma triglycerides, the lycopene correlation between maternal and cord plasma was the highest ($r = 0.975$, $p = 0.0001$) of all the carotenoids tested. Cord plasma retinol concentration, which was 50% of that of maternal plasma, was also found to have no correlation with that of maternal plasma. Plasma concentration of alpha-tocopherol showed no correlation between two groups, whereas there was high correlation between cord and maternal gamma-tocopherol concentrations ($r = 0.808$, $p = 0.0047$).

CONCLUSION: The nutritional status of mothers affects the nutritional status of their babies for certain fat soluble nutrients.

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