

Velzing-Aarts, et al. Plasma choline and betaine and their relation to plasma homocysteine in normal pregnancy. *AJCN* 2005; 81 (6):1383-1389.

Background: Plasma concentrations of total homocysteine (tHcy) decrease during pregnancy. This reduction has been investigated in relation to folate status, but no study has addressed the possible role of betaine and its precursor choline.

Objective: We investigated the courses of plasma choline and betaine during normal human pregnancy and their relations to plasma tHcy.

Design: Blood samples were obtained monthly; the initial samples were taken at gestational week (GW) 9, and the last samples were taken ≈3 mo postpartum. The study population comprised 50 women of West African descent. Most of the subjects took folic acid irregularly.

Results: Plasma choline (geometric \bar{x} ; 95% reference interval) increased continuously during pregnancy, from 6.6 (4.5, 9.7) $\mu\text{mol/L}$ at GW 9 to 10.8 (7.4, 15.6) $\mu\text{mol/L}$ at GW 36. Plasma betaine decreased in the first half of pregnancy, from 16.3 (8.6, 30.8) $\mu\text{mol/L}$ at GW 9 to 10.3 (6.6, 16.2) $\mu\text{mol/L}$ at GW 20 and remained constant thereafter. We confirmed a reduction in plasma tHcy, and the lowest concentration was found in the second trimester. From GW 16 onward, an inverse relation between plasma tHcy and betaine was observed. Multiple regression analysis showed that plasma betaine was a strong predictor of plasma tHcy from GW 20 onward.

Conclusions: The steady increase in choline throughout gestation may ensure choline availability for placental transfer with subsequent use by the growing fetus. Betaine becomes a strong predictor of tHcy during the course of pregnancy. Both of these findings emphasize the importance of choline and betaine status during normal human pregnancy.