Dietary Intake of Methyl-Donors and Fetal Growth: A Longitudinal Study

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Introduction: The effect of maternal dietary intake of methyl-donors during pregnancy on human fetal growth is still unclear\textsuperscript{2}. We aim to correlate intake of folate \textsuperscript{(B9)}, cobalamin (B12), and choline during gestation with fetal growth in Mexican women.

Methods: 80, 82, and choline intakes in diet were evaluated in pregnant women from Mexico City (PRINCESA cohort), using multiple 24-hour dietary recalls obtained monthly during gestation. Trajectories of methyl-donors intake were calculated, as well as mean intakes during the second and third trimester, using pre-gestational body mass index (p-BMI) as covariate and compared with ultrasound measurements of fetal growth (fetal weight = FW, fetal heart rate = FHR, and placental thickness = PT). The statistical difference (p<0.05) in data was determined by multiple regression, Wilcoxon test, 2-way ANOVA, and Spearman correlation.

Results: For hundred eighty-nine pregnant women were included in the longitudinal study. A subset of 244 women had several dietary recalls during pregnancy was analyzed to compare intake by trimester. Both approaches evidenced that 89, 82, and choline intakes are similar during pregnancy. Interestingly, choline intake is correlated with p-BMI obese women consume the least quantities in comparison to overweight, and this later group lowers than normal-weight women. Negative correlations were found between 89, 82, and choline intakes with FHR, as well as, choline intake with FHR. Methyl-donors intake and FHR showed no correlation between them.

Conclusion: Recommended dietary allowances (RDA) of 89 and 82 are covered in this group of women because, in addition to the dietary sources, they received supplements. On the other hand, choline intakes were under RDA during all pregnancy. We observed a less maternal intake of methyl-donors as the pregnancy progressed, affecting especially to women with p-BMI in the range of obesity. A decrease in the intake of methyl-donors during the phase of exponential growth of fetus may impact adversely some developmental programs linked to epigenetic modification. Follow up of these children is underway.

Results

1. Methyl-donors intake at middle and late pregnancy

2. Methyl-donors intake trajectories

3. Methyl-donors intake trajectories by pBMI and GW

4. Methyl-donors intake and FHR correlation and interaction analysis

5. Methyl-donors intake and FWH correlation and interaction analysis

6. Methyl-donors intake and PT correlation and interaction analysis