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Intake of dietary methyl donors in the first trimester affects asthma risk in children

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Maternal intake of dietary methyl donors during the first trimester of pregnancy modulates the risk of developing childhood asthma at age 7, according to a new study presented at the 2014 American Thoracic Society International Conference.

"Evidence on the effects of dietary methyl donor intake on childhood asthma has been mixed," said lead author Michelle Trivedi, MD, Clinical Fellow in Pediatric Pulmonology at Massachusetts General Hospital for Children in Boston. "It has been suggested that folate enrichment of some foods may have contributed to the increasing asthma and allergy prevalence in the US. In our study of more than a one thousand mother-child pairs, we found that maternal intake of the six methyl donors we studied, folate, choline, betaine, and vitamins B2, B6, and B12, had protective effects on the risk of developing childhood asthma, and that interactions between these nutrients affected the magnitude and the direction of this risk."

Methyl donors are nutrients involved in a biochemical process called methylation, in which chemicals are linked to proteins, DNA, or other molecules in the body. This process is involved in a number of important functions in the body, and dietary intake of methyl donors has been shown to affect the risk of developing a number of diseases, including heart disease and cancer.

In the current study, maternal dietary and supplemental methyl donor intake was assessed with food-frequency questionnaires in the first and

second trimesters in 1,052 mother-child pairs. Of the 1,052 children, 219 (20.8%) were diagnosed with asthma at age 7.

In analyses adjusting for age, body mass index, asthma, education, and household income of the mother along with the birth weight, sex, race/ethnicity, duration of breastfeeding, exposure to environmental tobacco smoke, and eczema of the child, only dietary vitamin B12 and choline in the first trimester were associated with lower asthma prevalence at age 7.

"Our results suggest that dietary intake of folate and other methyl donors during pregnancy does not increase the risk for asthma and may, in fact, decrease the risk of offspring developing asthma," said Dr. Trivedi. "Further study is warranted to dissect potential mechanisms."

Dr. Trivedi's group is planning further research on the mechanisms by which folate and other methyl donors affect the methylation status of DNA.

More information: Abstract 54675, Maternal Intake Of Dietary Methyl Donors In Pregnancy And Childhood Asthma At 7 Years, Scientific Abstract , 01.21 - Pediatric Epidemiology: Risk Factors, Outcomes and Management (PEDS) , M. Trivedi1, S. Sharma2, S. Rifas-Shiman3, C.A. Camargo4, S.T. Weiss5, M. Gillman3, D. Gold6, D.L. DeMeo7, A.A. Litonjua7; 1Massachusetts General Hospital - Boston, MA/US, 2Channing Laboratory - Boston, MA/US, 3Harvard Pilgrim Health Care Institute - Boston, MA/US, 4Massachusetts General Hospital, Harvard Medical School - Boston, MA/US, 5Channing Laboratory, Brigham & Women's Hospital - Boston, MA/US, 6Harvard School of Public Health - Boston/US, 7Brigham and Women's Hospital - Boston, MA/US