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## **Intakes of apple juice, fruit drinks and soda are associated with prevalent asthma in US children aged 2-9 years**

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High soft drink consumption has been linked with asthma. Anecdotal evidence links high fructose corn syrup with asthma. The receptor of advanced glycation end products (RAGE) has emerged as a mediator of asthma. The objectives of the present study were to assess the correlation between intake of beverages containing excess free fructose (EFF beverages) and asthma in children and epidemiologically test the mechanistic hypothesis that intake of high EFF beverages such as apple juice or beverages sweetened with high fructose corn syrup is associated with increased risk of asthma. This hypothesis is based on the possible effect of increases in the in situ intestinal formation of advanced glycation end products (enFruAGE) with EFF which may be absorbed and play a role in RAGE mediated asthma. We examined cross-sectional associations between beverage intake and self-reported current or history of asthma. Exposure variables were EFF beverages including apple juice (AJ), non-diet soft drinks (ndSD) and fruit drinks (FD). Orange juice (OJ) not an EFF beverage was included as a comparison. Rao-Scott  $\chi^2$  analysis was used for prevalence differences and logistic regression for associations adjusted for age, sex, race/ethnicity, BMI and total energy intake. Data are from the National Health and Nutrition Examination Survey 2003-2006, a nationally representative survey. US children (n=1961) aged 2-9 years with complete responses on the dietary frequency questionnaire. Intakes of EFF beverages were significantly associated with asthma in 2-9 year olds. Adjusted odds of asthma in children consuming EFF beverages  $\geq 5$  times/week was more than five times that in children consuming these beverages  $\leq 1$  time/month (OR=5.29, P=0.012). Children consuming AJ  $\geq 5$  times/week vs.  $\leq 1$  time/month adjusted for the other beverages were more than twice as likely to have asthma (OR=2.43, P=0.035). In contrast, there was a tendency for OJ to be protective. These results support the hypothesis that intake of high EFF beverages including AJ and beverages sweetened with high fructose corn syrup is associated with asthma in children aged 2-9 years. Results support the mechanistic hypothesis that enFruAGE may be an overlooked.

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