

Genetic variation linked to sugary food

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A new study released today in the online edition of *Physiological Genomics* finds that individuals with a specific genetic variation consistently consume more sugary foods. The study offers the first evidence of the role that a variation in the GLUT2 gene – a gene that controls sugar entry into the cells – has on sugar intake, and may help explain individual preferences for foods high in sugar.

The study was conducted by Ahmed El-Sohemy, Karen M. Eny, Thomas M.S. Wolever and Benedicte Fontaine-Bisson, all of the Department of Nutritional Sciences, University of Toronto, Toronto, Canada. Their study, entitled Genetic Variant in the Glucose Transporter Type 2 (GLUT 2) is Associated with Higher Intakes of Sugars in Two Distinct Populations, appears in the May 2008 edition of *Physiological Genomics* (<http://physiolgenomics.physiology.org/>).

The researchers tested the effects of the genetic variation in two distinct populations. One population consisted of older adults who were all either overweight or obese. The other population consisted of generally healthy young adults who were mostly lean.

The diet of the participants in the first population was assessed by recording all of the foods and beverages consumed over a three day period, and repeating this 3-day food record two weeks later to ensure that the effect was reproducible. All participants were interviewed face-to-face during the two visits to the research centers. For the second population, the study participants used a questionnaire that asked about the foods and beverages typically consumed during a one month period.

Blood was drawn from each participant, and their DNA extracted. The researchers examined the genotype distribution and compared the food intake data each participant provided between individuals with the variation and those without the variation in GLUT2. The DNA samples that carried the variation in GLUT2 were associated with consuming more sugars in both populations studied.

The results of the study showed that a genetic variation of GLUT2 is associated with differences in the habitual consumption of sugars both within and between two distinct populations. Specifically:

- those individuals with the GLUT2 variation consistently consumed more sugars (sucrose (table sugar)), fructose (simple sugar such as corn syrup) and glucose (carbohydrates), regardless of age or sex.
- the two sets of food records from the older group showed that the older individuals with the variation consumed more sugars than their non-variant older counterparts (112 ± 9 vs. 86 ± 4 grams of sugar per day and 111 ± 8 vs. 82 ± 4 grams per day).
- the individuals in the younger population who carried the variant were found to consume more sweetened beverages (0.49 ± 0.05 vs. 0.34 ± 0.02 servings per day) and more sweets (1.45 ± 0.10 vs. 1.08 ± 0.05 servings per day) than their non-variant counterparts.
- there were no differences in the amount of protein, fat, starch or alcohol that was consumed by those either with or without the variant.

According to Dr. El-Sohemy, the study's senior researcher, "We have found that a variation in the GLUT2 gene is associated with a higher intake of sugars among different populations. These findings may help explain some of the individual variations in people's preference for sugary foods. It's especially important given the soaring rates of obesity

and diabetes throughout much of the world.”

Source: American Physiological Society

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