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Zinc transporter *SLC39A11* polymorphisms are associated with chronic gastritis in the Korean genome and epidemiology study (KoGES)

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Statement of the Problem: To determine and search for the genes that are associated with gastritis and are possible therapeutic targets for precision nutrition.

Methodology & Theoretical Orientation: Participants in this cross-sectional study (n = 3882 + 252) were from a cohort of the Korean Genome Epidemiology Study (KoGES) in 2001. Theage, gender, education, smoking and drinking status, exercise, stress, and income level for all participants were determined via questionnaire. Demographic and anthropometric data were collected. Fasting blood samples were collected to determine serum levels of glucose, insulin, total bilirubin, total cholesterol, HDL-cholesterol, and triglycerides. The presence of chronic gastritis was defined as confirmed diagnosis by a physician. Food consumption was determined using a semi-quantitative food frequency questionnaire.

Results: (1) We found eight different single nucleotide polymorphisms (SNPs) that are significantly different between subjects without gastritis and those with gastritis. Of eight SNPs, three [rs17183225 (C/T), rs17780814 (A/C), and rs17780820 (A/G)] are closely located in the intronic region of zinc transporter *SLC39A11*, commonly known as *ZIP11* and show linkage disequilibrium (D´=1.0). (2) We also found that participants with (TCA+TCG) haplotype of *ZIP11*, at high levels of dietary intake of spicy foods, showed a significantly increasing tendency in odds of being having chronic gastritis when compared with those with CAA haplotype (OR 2.620; 95% CI, 1.207-5.689). (3) Demographics analyses revealed that education, exercise, income, and stress levels are associated with the presence of gastritis (all $P < 0.001$). After adjusting for confounding factors, BMI, fasting glucose, macronutrient intakes, riboflavin, and coffee drinking are associated with gastritis (all $P < 0.05$). We also found positive associations between higher meal frequency and lower spicy food preference and gastritis.

Conclusions: Zinc transporter gene *ZIP11* is associated with chronic gastritis in the Korean population and may interact with spicy food, which suggests *ZIP11* as a therapeutic target for precision nutrition.

Biography

Ji-Hyun Bae is a professor of Food Science and Nutrition at Keimyung University in Korea.She is an associate editor in Journal of Advanced Nutrition and Human Metabolism, and was a visiting Professor of Pediatrics - Harvard Medical School/Massachusetts General Hospital

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