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### What do we know about artificial sweetener and its relationship with obesity and diabetes epidemic?

Obesity is among the most common and costly chronic disorders worldwide. The new epidemic is in Asia countries. Growing evidence suggests that obesity is a disorder of the energy homeostasis system. Weight control is important for reducing the risk of metabolic disease such as diabetes. Obesity and diabetes epidemic coincides with an increase in the widespread use of artificial sweetener in modern diet for weight control by retaining sweet taste without increase caloric intake. However, research studies suggest that artificial sweetener may contribute to weight gain instead of weight loss. Artificial sweetener caused weight gain may have multiple etiology. The new study shows that sweetness helps to determine how calories are metabolized and signaled to the brain. When sweetness and calories are matched, the calories are metabolized and this is registered by brain reward circuits. However, when a mismatch occurs, the calories fail to trigger the body's metabolism and the reward circuits in the brain fail to register that calories have consumed. As a result, artificial sweetener triggers food seeking behavior and may contribute to obesity. Calories are only half of the equation; sweet taste perception is the other half. A sweet-tasting low calorie drink can trigger a greater metabolic response than drinks with higher calories, explaining the association between artificial sweeteners and diabetes discovered in earlier studies. Studies found artificial sweetener intake can induce excess activation of sweet taste receptor and evoke GLP-2 release, in turn, increase SGLT1 expression and mucosal growth. SGLT1 as a prime intestinal glucose transporter plays important role in intestinal glucose sensing and incretin secretion. So, artificial sweeteners encourage sugar craving and sugar dependence as well as alter glucose tolerance. Studies also showed that consumption of artificial sweetener drives the development of glucose intolerance through induction of compositional and functional alterations of the intestinal microbial. Numerous studies have indicated an important role of the gut microbiome in body weight control and glucose metabolism and regulation.

### Biography

Lynn Ge-Zerbe is a recipient of the Leading Physician of the World and Pinnacle Professional of the Year 2017 award. She is board certified in Endocrinology and Internal Medicine, the Owner of Boise Thyroid & Endocrinology PC, a concierge endocrinology and weight loss practice, the Principle Investigator of Advanced Clinical Research, a Consultant Endocrinologist with RubiconMD and Video Medicine. She has earned her MD at PUMC, MPH of Epidemiology at University of Pittsburgh, Post-doctoral Fellowship in Molecular Medicine at NIH, Residency in Internal Medicine at Leigh Valley Hospital, Penn State University, Fellowship in Endocrinology at Vanderbilt University as well as Age Management Certification by AMMEF. She is passionate in combining east and west medicine to cure and prevent endocrinology disorders.

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