

Non-Nutritive Sweeteners: Too Sweet to be True?

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The menace of obesity, diabetes and their related complications has engulfed the world. Although their treatment is centred around targeted therapeutic modalities, dietary regimens and regular exercise, however, due to the increasing concerns about the consumption of food high in sucrose, food products containing non-nutritive sweeteners (NNS) have gained tremendous popularity among obese and diabetic individuals. These are the modern age synthetic dietary ingredients employed for imparting sweetness to foods, beverages and nutritional supplements without the added energy from refined carbohydrates. Globally, its use has amplified rapidly and a 2-4 times increase has been observed over the past two decades.¹

Alarming, studies have shown consumption of non-nutritive sweeteners to adversely affect energy metabolism and glycaemic control by promoting insulin resistance and weight gain,² and therefore, the guilt-free pass to eating and drinking offered by the use of NNS for caloric reduction has been questioned. Moreover, a few studies have reported a positive association of NNS with type 2 diabetes mellitus.³ Commonly used NNS have also been implicated in increasing the risk for many cancers as well as impacting cognitive functioning.⁴ Childhood obesity is an alarming concern the world over, and for this reason, the consumption of NNSs in children has also increased greatly.⁵ However, the long-term health outcomes of this prolonged exposure to NNS in the growing age are not clear. Prospective studies and clinical trials in the paediatric population are warranted to provide mechanistic insights on longstanding NNS consumption. However, experimental studies in rodent pups subsequent to peri-natal exposure to NNS following maternal ingestion have highlighted the potential of NNS to interfere with metabolic development of the pups.⁶

The dramatic increase in NNS consumption is a potential threat to human health. The evidence base linking NNS to the derangement of metabolic parameters is growing steadily but multiple gaps still exist. The need to identify these gaps in evidence regarding the health and safety effects of NNSs is real as the limited data available currently are fraught with inconsistencies. Local research on the use of NNS is almost non-existent. It is high time to gather indigenous data on the metabolic, oncogenic, immunologic and other systemic effects of NNS considering the

ever-expanding trend toward fitness and weight watching in the local setting and the consequent boom in the use of NNS.

The appeal of food products containing NNS is related to their calorie-free sweet taste and this is the reason why people with normal weight and low or no risk of diabetes have also taken to them. It is equally important to study the use of NNS in euglycemic normal-weight individuals as its consumption by normal individuals is linked to risk for developing diabetes.⁷ Guidelines on the use of NNS in pregnancy also need to be formulated in light of the possible alterations in foetal, neonatal and maternal microbiome.⁶ Dose-response studies are also required to inform scientists and consumers alike about the possible negative outcomes related to the substitution of natural sugar by NNS. Recognizing the potential of natural sweeteners such as maple syrup, honey, stevia, coconut nectar and molasses as replacement to NNS is another facet that needs to be explored. The hunt for a perfect sweetener continues...

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