

## The Impact of Artificial Sweeteners on Incretins and the Level of Incretins in Type 2 Diabetes Mellitus Patients

N. Charumithra\*, D. Anusha\*\*, S. Seethalakshmi\*\*\*

Sri Ramachandra University, Chennai, India  
E-mail: charumithra.whizdoc@gmail.com

### Background

Type 2 diabetes mellitus (T2DM) has attained a state of epidemic of late. It is known to predispose many a number of systemic complications, starting from myocardial infarction till candidal infections and still the count goes on. A lot of drugs are in use and also in the process of making to control diabetes. Incretin and its analogues are a recent advancement. Artificial sweeteners are also used to control blood sugars. Could they have an impact on the level of incretins as well?

### Aims & Objectives

To study the impact of artificial sweeteners on incretins and the level of incretins in type 2 diabetes mellitus patients.

### Material & Methods

Standard analysis of the articles, standard pharmacology textbooks and online search engines has resulted in the present review. Incretins are the Gastro Intestinal hormones that are released after meals and stimulate insulin secretion and hence oral glucose has more insulinogenic action than intravenous glucose (incretin effect). They are Glucagon Like Polypeptide (GLP-1) and Glucose Dependent Insulinotropic Polypeptide (GIP), the expression of which is lowered in type 2 diabetes mellitus patients. Artificial sweeteners like sucralose, aspartame, etc are being used rampantly for its calorific value. Certain studies show that these artificial sweeteners do stimulate the "gut receptors"

hence enhancing insulin production and glucose uptake by the cells which could be beneficial in normal individuals. While certain studies disagree with this and say that artificial sweeteners only have a calorific advantage and do not have an impact on the incretins and thus no insulinogenic activity. They further say that due to the lack of insulinogenic potential there exists no difference in their mechanism of action. This forms the basis of this literature review.

### Results

On analysis of many articles, it is found that artificial sweeteners given along with a carbohydrate source like glucose, etc might have an effect on the incretins especially GLP in normal individuals, but their role in T2DM patients is still a query. Certain studies also show that artificial sweeteners cause excessive stimulation of insulin receptors, hence aiding obesity.

### Conclusion

On doing this review, a deeper analysis of incretins and artificial sweeteners was done and helped in a better understanding of their mechanism of action. More studies have to be done in this field to analyse the effect of artificial sweeteners in type 2 DM patients to reiterate the findings from the previous researches or to come up with new results itself.

**Keywords:** Incretins; Artificial sweeteners; Type 2 DM.