



Artificial Sweeteners

For Prelims: Artificial sweeteners, [Hypertension](#), [World Health Organization \(WHO\)](#), [type-2 diabetes](#)

For Mains: Artificial sweeteners and their role as sugar substitutes, potential risks for health in relation artificial sweeteners

Why in News?

Artificial sweeteners have gained popularity among calorie-conscious individuals seeking **low-calorie options**. However, recent studies have raised **concerns about their long-term effectiveness for weight loss and potential health risks**.

- The [World Health Organization \(WHO\)](#) has released recommendations against the use of artificial sweeteners for weight control and prevention of **lifestyle diseases**.

What are Artificial Sweeteners?

- **About:**
 - Artificial sweeteners are **sugar substitutes** that are used as **alternatives to natural sugars**.
 - These sweeteners are chemically synthesized and **provide a sweet taste without the high calorie content of regular sugar**.
 - They are commonly used in **various food and beverage products**, including diet sodas, sugar-free desserts, and low-calorie snacks.
 - Some examples of artificial sweeteners are **saccharin, aspartame, acesulfame potassium (Ace-K), sucralose, neotame, and advantame**.
- **Benefits:**
 - Artificial sweeteners offer **benefits for weight management, diabetes control, tooth decay prevention**, and provide safe options for individuals with **phenylketonuria (PKU)**, a genetic disorder, due to their low or zero-calorie content, **minimal impact on blood sugar levels**, non-fermentable nature, and absence of phenylalanine.
- **Negative Impacts:**
 - **Controversial Health Effects:**
 - Some studies suggest potential negative health effects of artificial sweeteners, such as an **increased risk of metabolic disorders, and disrupted gut microbiota**. However, scientific evidence remains inconclusive.
 - **Digestive Issues:**
 - Some people may experience digestive discomfort, such as bloating, gas, or diarrhea, after consuming products containing artificial sweeteners.

What are the Key Findings from the WHO Report?

- **Findings:**
 - WHO advises against using artificial sweeteners as a means of achieving weight control or

reducing the risk of non-communicable diseases.

- While **short-term use may result in weight loss** and **reduced [body mass index \(BMI\)](#)**, long-term consumption of artificial sweeteners has been associated with weight gain.
- Some studies suggest a potential connection between artificial sweeteners and **bladder cancer and preterm birth in pregnant women**.
- Higher intake of artificial sweeteners, particularly in beverages and added to foods, is associated with an increased risk of **type-2 diabetes, cardiovascular disease (including stroke and [hypertension](#))**, and preterm birth.

▪ **WHO Recommendations:**

- Instead of relying solely on non-sugar sweeteners, the WHO recommends considering **other methods to reduce the intake of free sugars**, such as **consuming naturally occurring sugars from fruits or opting for unsweetened food and beverages**.

Example - Diet Colas:

- Diet colas, marketed as zero-calorie alternatives to regular colas, use artificial sweeteners to achieve the zero-calorie claim.
- The intense sweetness of artificial sweeteners can alter taste perception, making normal sweets seem less sweet and potentially leading to cravings for more sugary foods.
- Special attention is given to [erythritol](#), which should be avoided due to its potential health risks.

UPSC Civil Services Examination, Previous Year Question (PYQ)

Prelims

Q. Aspartame is an artificial sweetener sold in the market. It consists of amino acids and provides calories like other amino acids. Yet, it is used as a low-calorie sweetening agent in food items. What is the basis of this use? (2011)

(a) Aspartame is as sweet as table sugar, but unlike table sugar, it is not readily oxidized in human body due to lack of requisite enzymes.

(b) When aspartame is used in food processing, the sweet taste remains, but it becomes resistant to oxidation.

(c) Aspartame is as sweet as sugar, but after ingestion into the body, it is converted into metabolites that yield no calories.

(d) Aspartame is several times sweeter than table sugar, hence food items made with small quantities of aspartame yield fewer calories on oxidation.

Ans: (d)

Source: IE

