



## 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**

