Sugar substitutes are sweeteners that you use instead of regular table sugar (sucrose). Artificial sweeteners are just one type of sugar substitute.

Artificial sweeteners and other sugar substitutes are found in a variety of food and beverages marketed as "sugar-free" or "diet," including soft drinks and baked goods.

One of the highly touted benefits of artificial sweeteners is that they have virtually no calories. In contrast, one teaspoon of sugar has about 16 calories.

### Relative sweetness of high-intensity sweeteners

<table>
<thead>
<tr>
<th>Sweetener</th>
<th>Relative sweetness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspartame</td>
<td>200</td>
</tr>
<tr>
<td>Acesulfame K</td>
<td>200</td>
</tr>
<tr>
<td>Saccharin</td>
<td>200</td>
</tr>
<tr>
<td>Acesulfame II</td>
<td>100</td>
</tr>
<tr>
<td>Neotame</td>
<td>150</td>
</tr>
<tr>
<td>Stevia extract</td>
<td>200</td>
</tr>
<tr>
<td>Neotame</td>
<td>8,000</td>
</tr>
<tr>
<td>Saccharin</td>
<td>300</td>
</tr>
<tr>
<td>Thaumatin</td>
<td>2,000-5,000</td>
</tr>
</tbody>
</table>

*Relative sweetness versus table sugar or sucrose (1). sweetness is dependent on several factors, including the concentration of the sweetener, temperature, pH, type of material, and the concentration of the sucrose solution used as a comparison.

Source: Calorie Control Council, 2016.

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**Facts about Artificial Sweeteners**

- **Artificial sweeteners do not get metabolized in the body; however, they may interact with the gut microbiome leading to some health issues.**
- **FDA Approved:** The FDA has approved some artificial sweeteners when consumed in given limits.
- **Risk:** Overconsumption of artificial sweeteners may increase the risk of type 2 diabetes and may not be the healthy alternative to sugar as projected.
- **Caution:** The assumed beneficial effects of artificial sweeteners such as promoting weight loss or blood sugar control have not been validated through clinical studies.

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**General Standard for Food Additives (GSFA) published by the Codex Alimentarius Commission (Codex) approved (with limit) the addition of certain artificial sweeteners in certain types of food products.**

**FDA:** Food and Drug Administration, US
PESTICIDE RESIDUES

Pesticides are used to protect crops against insects, weeds, fungi and other pests.

KEY FACT 1

Pesticides are potentially toxic to humans and can have both acute and chronic health effects, depending on the quantity and ways in which a person is exposed.

KEY FACT 2

Some of the older, cheaper pesticides can remain for years in soil and water. These chemicals have been banned from agricultural use in developed countries, but they are still used in many developing countries.

KEY FACT 3

Pesticides play a significant role in food production. They protect or increase yields and the number of times per year a crop can be grown on the same land. This is particularly important in countries that face food shortages.

KEY FACT 4

None of the pesticides that are authorized for use on food in international trade today are genotoxic (damaging to DNA, which can cause mutations or cancer). Adverse effects from these pesticides occur only above a certain safe level of exposure.

KEY FACT 5

When people, such as agricultural workers, are exposed to large quantities of organophosphates, these chemicals can be harmful.

ORGANOPHOSPHATE (INSECTICIDE) POISONING

Organophosphate pesticide exposure may occur through inhalation, ingestion, or dermal contact.

Crops that farm workers come into contact with that also may include organophosphates such as apples, celery, bell peppers, peaches, strawberries, nectarines, grapes, spinach, lettuce, cucumbers, domestic blueberries, and potatoes.

People working on a farm should wear protective gear, during and after applying pesticides containing organophosphate to the crops.

Protective gear should include covering the head and neck, wearing a mask or respirator, and using eye protection.

Prevention may be as simple as thoroughly washing all fruits and vegetables. This can help prevent accidental exposure from contaminated food.

Source: https://www.who.int/en/news-room/fact-sheets/detail/pesticide-residues-in-food

DID YOU KNOW?

Coke and Pepsi are used as pesticides in India, because they are cheaper and more effective.


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**TOP AFLATOXINS FACTS**

**What are aflatoxins?**
Natural poisons produced when certain mold species (Aspergillus flavus or Aspergillus paraciticus) grow in food. Aflatoxin B1 is recognized as one of the most potent naturally occurring carcinogenic substances.(2)

**What are the countries most affected?**
The aflatoxins-producing Aspergillus species grow best in tropical climates.

**Human health effects:**
Long-term chronic exposure can result in liver cancer and immune suppression in adult, also stunting an children. Exposure to high levels can be fatal.

**Effects in livestock:**
Weigh loss and death

Chicken fed contaminated feed lay 70% less eggs than those on normal diets.(3)

**At what stage along the food chain does contamination occur?**
The Aspergillus fungus can produce aflatoxin during pre-harvest, harvesting, handling, storage, processing and transport stages of the food chain if conditions are favorable.

**Types of food most likely to be contaminated is**
Maize, peanut, dried spices and tree nuts.

**Are aflatoxins destroyed during cooking or processing?**
Aflatoxins are not destroyed by normal food processing practices, such as fermenting, boiling, cooking nor baking.

**Potential mitigation measures:**
- Biological control and good agricultural practices.
- Good post-harvest practices.
- Dietary diversification.
- Food regulations.

**REFERENCES**