Sorbitol

WHAT IS SORBITOL?

- A low-potency, caloric sweetener
- A 6-carbon sugar alcohol
- Found naturally in fruits such as cherries, prunes, apples and pears
- Sorbitol is widely used polyol in sugar-free chewing gum and personal hygiene products
- Commercially available in a liquid (crystallising and non-crystallising grade) and crystalline form

PROPERTIES OF SORBITOL

- Low in calories: Contributes 2.4 kcal/g
- Has a cooling effect
- Non-cariogenic
- Has minimal impact on blood glucose
  - o Blood glucose and insulin response to sorbitol are very low compared to sucrose
- Low potency sweetener: 0.5–0.7x the sweetness of sucrose
- Apart from imparting sweetness, sorbitol can be used as a bulking agent, humectant, sequestrant, stabiliser and thickener
- 25–80% of sorbitol is absorbed in the gastrointestinal tract and is metabolised by the liver

APPLICATIONS

- Baked goods
- Fruit preserves
- Confectionery
  - o For example, lozenges, tablets, hard candy, sugar-free gummies and jellies
- Chewing gum
  - o Despite being less sweet than xylitol, sorbitol is one of the most common sugar alcohols used in sugar-free gum
- Dairy products and ice cream
- Surimi
  - o As a cryoprotectant during freezing
- Cooked sausages/meats
  - o To improve flavour and prevent charring during cooking process

REGULATORY STATUS OF SORBITOL

- Established ADI for sorbitol/sorbitol syrup is unspecified
- The use of sorbitol has been general regarded as safe (GRAS) or approved for use in foods across countries, subject to varying specifications
- The US Food and Drug Administration (US FDA) approved the use of sorbitol in 2006 in food applications and the following health claim for sorbitol in food products: "Does not promote tooth decay."
  - Certain food products that contain sorbitol may be required to bear the statement: "Excessive consumption can cause a laxative effect"
- The US FDA has defined excessive consumption of sorbitol to be more that 50g/day
- Codex General Standard for Food Additives (GSFA) approved the use of sorbitol in food in 1981
- Scientific Committee for Food of the EU concluded that sorbitol is acceptable for use, without setting a limit on its use in 1985
- The European Food Safety Authority (EFSA) approved sorbitol as a food additive in 2008, later permitting the following health claim: "Consumption of foods/drinks containing sorbitol contributes to maintenance of tooth mineralisation in 2011."
  - It was also mandated that food products containing over 10% of sorbitol must bear the following statement: "Excessive consumption may product laxative effects."
- The EU Sweeteners in Food Regulations specified the purity criteria for sorbitol powder to be no less than 91% sorbitol on a dry weight basis; sorbitol syrups must contain a minimum of 50% sorbitol on a dry basis and a minimum of 69% total solids in the liquid
- Food Standards Australia and New Zealand (FSANZ) approved sorbitol for use in foods, mandating an advisory statement on foods that contain over 25% of sorbitol

SORBITOL IN A NUTSHELL

Scientific Name
Sorbitol
Sweetness Intensity
0.5–0.7x sweeter than sucrose
ADI Limit
Unspecified
Safe for Children?
Yes
Safe for Pregnant and Breastfeeding Women?
Yes
Nutritive Value
2.4 kcal/g

References

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[3] O'Donnell, K. and Kearsley, M. (2008). Sweeteners and Sugar Alternatives in Food Technology. 2nd ed. New York, NY: John Wiley & Sons.

[4] WHO. (2018). Evaluations of JECFA – Sorbitol.

[5] WHO. (2018). Evaluations of JECFA – Sorbitol Syrup.

[6] US Food and Drug Administration. (2018). Sorbitol. 21CFR184.1835.