

NUTRITION NEWS

Polyols & Gastrointestinal (GI) Effects

What are polyols?

Polyols, also called sugar alcohols, are a group of versatile, reduced-calorie carbohydrates that provide the taste and texture of sugar with about half the calories. They are used as food ingredients to replace sugar in an increasing variety of sugar-free and reduced-calorie foods and beverages for their functional and health benefits. These products include chewing gums, candies, ice cream, baked goods and fruit spreads. In addition, they function well in fillings and frostings, canned fruits, beverages, yogurt and tabletop sweeteners.

What are the functional benefits of polyols?

In addition to providing sweetness, polyols add bulk and provide a smooth, creamy texture to sugar-free foods where this is desired. Polyols also can improve product shelf life and stability by aiding moisture retention and controlling product crystallization.

What are their health benefits?

In addition to their clean sweet taste and unique functional properties, polyols offer important health benefits. For example, because they are incompletely digested polyols are reduced in calories and do not cause sudden increases in blood sugar levels.

Importantly, polyols are not readily converted to acids by bacteria in the mouth and, therefore, do not promote tooth decay.

Do they cause gastrointestinal problems?

Because polyols are only partially digested and absorbed in the small intestine, they travel to the large intestine where they may be fermented by bacteria. This fermentation leads to the production of compounds that serve as nutrients for colon cells and result in the formation of gas. This gas leaves the body in the form of flatulence. Additionally, water follows the undigested and unabsorbed polyols into the large intestine, where it is re-absorbed.



Eight polyols are currently available:

- Erythritol
- Hydrogenated starch hydrolysates or polyglycitols
- Isomalt
- Lactitol
- Maltitol (including maltitol syrups)
- Mannitol
- Sorbitol
- Xylitol



The extent of this water re-absorption is dependent upon the individual's capacity to do so. Non-absorbed water softens the feces and is eliminated in the feces. Thus, consumption of polyols may lead to a slight increase in the frequency of bowel movements and a softer consistency of the feces. These fermentation and laxative effects are common for all non-digestible carbohydrates and foods rich in them, such as beans, cabbage, onions, grapes, prunes, and other high-fiber foods.

Does everyone experience GI effects when consuming polyols?

The perception of the gastrointestinal (GI) effects of polyols may be varied, as people respond differently. For example, some people may be troubled while others perceive them as signs of a “fiber-working” effect. Additionally, effects can vary for different persons or on different occasions depending on an individual's sensitivity as well as the amount of polyol eaten at one time, the type of polyol consumed, and other foods eaten with the polyol-containing product. When a polyol-containing food is eaten as part of a meal, the transit time through the gastrointestinal (GI) tract is lengthened, allowing more water to be absorbed and more of the polyol to be fermented in the large intestine. This means that GI effects are reduced or may not be perceived at all. Likewise, if the polyol-containing food is consumed slowly over time, this would be beneficial in a similar way. Consuming polyol-containing products frequently increases the tolerance of polyols and decreases gastrointestinal effects because of a preferential increase in bacteria capable of metabolizing the polyol.

The characteristics of polyols leading to their benefits (i.e. toothfriendly properties, very low rise in blood glucose levels, fewer calories) as well as gastrointestinal effects are essentially the same for all polyols, thus all may induce laxation when eaten in large quantities (physiological overload). “Normal” bowel function varies widely between individuals, and so too does the perception of digestion.



What should a person do if he or she is sensitive?

Any GI effects from consuming foods with polyols, if they occur at all, are usually mild and temporary. If a person believes she/he is negatively affected, the amount eaten on a single occasion should be reduced. Most people will adapt to polyols after a few days, the same way they do to other high fiber foods. Many people have learned to eat only a small amount of sugar-free products at first and then to gradually increase these foods in the diet. As with any other food, consume foods containing polyols in moderate amounts.

For more information about polyols, visit: www.polyol.org



Calorie Control Council www.caloriecontrol.org

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