

Polyols in
SUGAR-
FREE and
REDUCED
CALORIE

Foods and
Beverages

What Are Polyols?

Polyols are:

- Sugar-free, low-digestible carbohydrate sweeteners
- Also known as sugar replacers, a more consumer-friendly name that better describes how and why they are used
- Referred to as “sugar alcohols” in “Nutrition Facts Panel” but are neither sugar, nor alcohols

Polyols Used in the U.S.

erythritol

HSH (polyglucitol)

isomalt

lactitol

maltitol

mannitol

sorbitol

xylitol

Where Are Polyols Used?

Polyols are used to prepare a wide range of products such as:

- chewing gum
- candy
- ice cream
- frozen desserts
- baked goods
- chocolate
- fruit spreads
- toothpaste
- mouthwash
- breath mints
- cough syrup
- cough drops

How Do Their Calories Compare?

Sugar provides approximately 4.0 calories per gram

erythritol	0.2 calories per gram
mannitol	1.6 calories per gram
isomalt	2.0 calories per gram
lactitol	2.0 calories per gram
maltitol	2.1 calories per gram
xylitol	2.4 calories per gram
sorbitol	2.6 calories per gram
HSH (polyglucitol)	3.0 calories per gram

Roles of Polyols in Food

“SUGAR REPLACER”

Polyols replace the bulk and sweetness of sugars in foods and they enhance the flavor of sugar-free foods.

Roles of Polyols in Food

ADD BULK AND TEXTURE

Polyols have a mild sweet taste. Thus, polyols can be used in the same volume as sugar, adding bulk to foods with about half the calories.

Polyols May Replace or Reduce the Sugar in Foods

2010 Dietary Guidelines for Americans, the American Heart Association and others authorities recommend reducing the amount of sugar in the diet

- Polyols provide many of the same physical properties as sugar, including bulk and sweet taste
- Polyols can replace all or part of the sugar, resulting in reduced sugar or sugar-free foods

Advantages of Polyols

CONSUMER-FRIENDLY

Polyols taste like sugar, yet provide fewer calories than sugar. There are *many* sugar-free foods that are reduced in calories -- thanks to polyols and high-intensity sweeteners.

In addition, polyols do not cause sudden increases in blood glucose levels, and are generally very low in blood glucose effect.

Advantages of Polyols

“DO NOT PROMOTE TOOTH DECAY”

- Polyols are not readily converted to acids by bacteria in the mouth. Therefore, they don't contribute to tooth decay or promote dental caries.
- The FDA has approved a health claim that sugar-free foods sweetened with polyols “do not promote tooth decay.”
- The American Dental Association has issued an official statement that supports this claim as well.

How Do Polyols Function in the Body?

- They are only partially absorbed by the body.
- Absorbed portions are either metabolized (generally by insulin-independent mechanisms) or excreted via the urinary tract.
- Unabsorbed polyols are partially fermented in the colon and excreted.

Gastrointestinal Health

FOR THE VAST MAJORITY OF CONSUMERS, THESE SWEETENERS DO NOT CAUSE ANY PROBLEMS

- In some people, excessive consumption may cause mild and temporary gas or laxative effects, similar to reactions to beans and certain high-fiber foods.
- Most people will adapt after a few days.
- If you believe you are sensitive eat only a small amount at first, then gradually increase these foods in the diet.

Gastrointestinal Health

A 2009 review of 68 clinical studies^[1] evaluated reported gastrointestinal effects of polyols and other low-digestible carbohydrates. Researchers Dr. Joanne Slavin and Hollie Grabitske analyzed the studies for associations between gastrointestinal effects and intake levels of low-digestible carbohydrates. The authors concluded,

“Although the prevalence of low-digestible carbohydrates in the food supply is increasing, it appears that normal intakes of foods with these added carbohydrates are below the levels that would cause significant gastrointestinal effects.”

¹Grabitske, H. A. and J. L. Slavin. (2009). Gastrointestinal effects of low-digestible carbohydrates. *Crit Rev Fd Sci Nutr.* 49:327-390.

Diabetes and Weight Control

SUGAR REPLACERS ARE USEFUL FOR PEOPLE WITH DIABETES AND THOSE TRYING TO CONTROL THEIR WEIGHT:

- They have a low rate of digestion and absorption and thus cause smaller increases in blood glucose and insulin levels than do sugars and other carbohydrates.
- Polyols have lower caloric values making weight goals easier to achieve.

Diabetes and Weight Control

CALCULATIONS FOR EXCHANGE LISTS

- If all the carbohydrates in the food are from polyols and the total carbohydrates are less than 10 grams, consider it a “free food.”
- If all the carbohydrates in the food are from polyols and the grams of polyols are greater than 10 grams, subtract half the grams of polyols from the total carbohydrate grams.
- If there are several sources of carbohydrates in the food, including polyols, subtract half the grams of polyols from the total carbohydrate grams. Count the remaining grams of carbohydrate according to a diabetic exchange list.

What to Look for on the Nutrition Facts Panel

- “Sugar-free” foods may be sweetened with one or more polyols, low-calorie sweeteners or a combination of polyols and low-calorie sweeteners.
- The claim “sugar-free” does not necessarily mean calorie- or carbohydrate- free.
- Polyols are not calorie- or carbohydrate-free. Foods containing polyols will vary in their calorie and carbohydrate content.

What to Look for on the Nutrition Facts Panel

- Polyol content of foods may be listed voluntarily on the Nutrition Facts Panel. However, if the food label makes a claim about the sugar content of the product and polyols are present, the polyol content must be listed.
- If only one polyol is present, it may be listed by specific name under the heading “Total Carbohydrates.” If more than one polyol is present, the term “sugar alcohols” will appear under the carbohydrate heading.

(Note: The FDA is considering whether the term “polyol” would be less confusing to consumers than “sugar alcohol.”)

Nutrition Information

CARBOHYDRATE LABELING

- Some food manufacturers using polyols in their products use the terms “net carbs” or “impact carbs” on the food label. The two terms mean the same and labels vary as to which term is used.
- The FDA has not defined these terms.
- As used, the total grams of polyols and fiber are subtracted from the total grams of carbohydrates in the food – manufacturers are assuming the polyols and fiber have no significant impact on blood glucose. Although polyols have less impact on blood glucose than sugars, that impact is not zero.

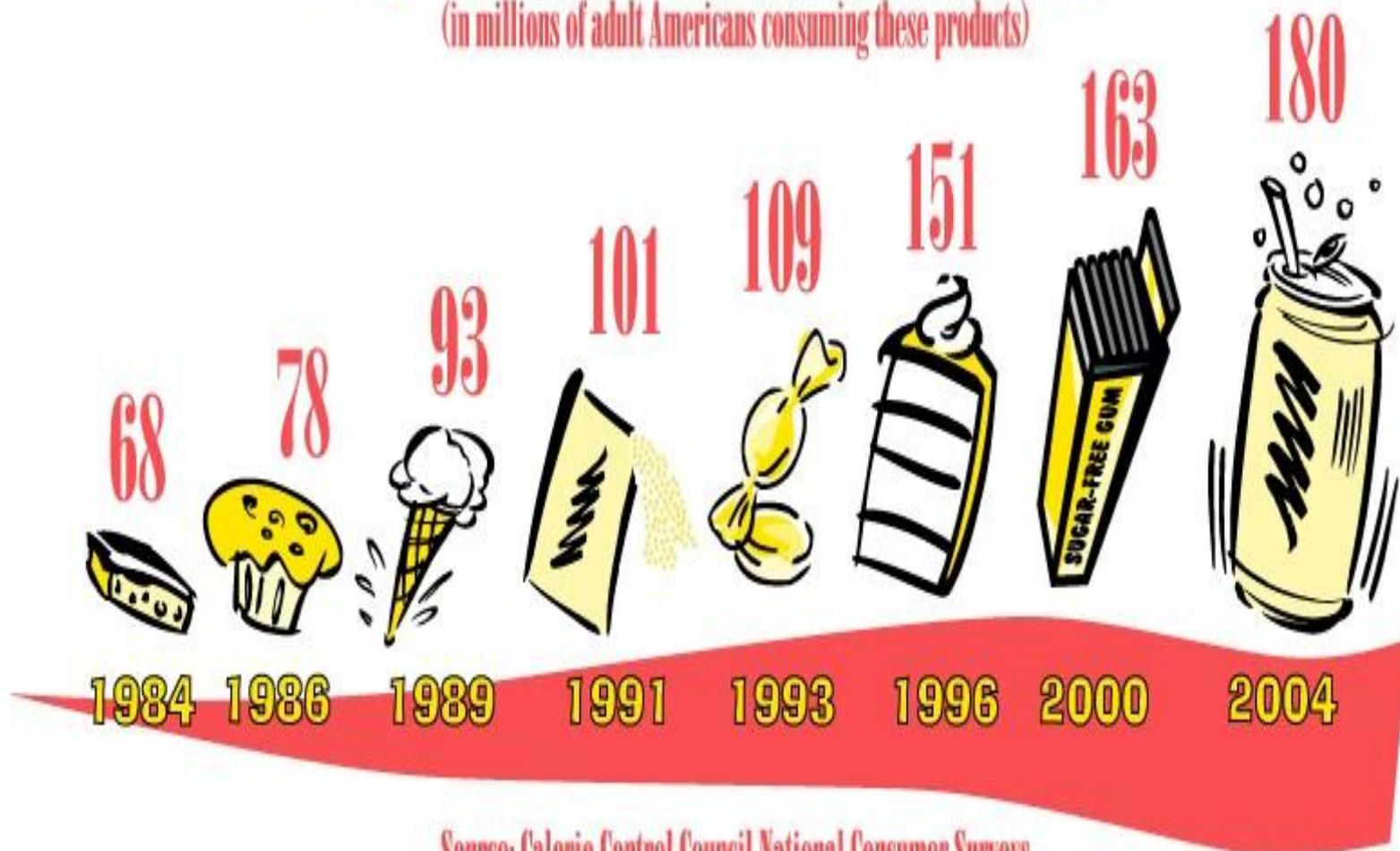
The Future is Sweet!

Due to the increased availability of polyols and innovations in food technology, consumers can enjoy many good-tasting, sugar-free and reduced calorie products.

These products may assist in maintaining good oral health and managing weight and blood glucose levels.

Consumer Use of Low-Calorie, Sugar-free foods & beverages

(in millions of adult Americans consuming these products)



Source: Calorie Control Council National Consumer Surveys

For more information about polyols
and low-calorie sweeteners, log onto
www.caloriecontrol.org

**Information provided by the Calorie Control Council, 2004*