

## SUCRALOSE: IS IT SAFE?

**S**ucralose is a non-nutritive sweetener or sugar substitute. It is used as an ingredient in a variety of processed foods and beverages. It is also found in the tabletop sweeteners sold under the *Splenda* brand name.

Sucralose is made from sugar (sucrose) by a multi-step process that replaces three hydrogen-oxygen groups on the sugar molecule with three chlorine atoms. This results in a heat stable compound which means that its sweetening power does not reduce with heating. So products made with sucralose maintain their sweetness during cooking and baking.

Although sucralose tastes like sugar, it is 600 times sweeter than sugar. It provides no calories because the body is unable to recognise it as a carbohydrate and therefore it is not broken down like sucrose in the body and used for energy. The sucralose molecule is poorly absorbed and passes through the body unchanged. The little that may be absorbed (approximately 15%) is excreted unchanged in the urine.

When sucralose replaces sugar in foods and beverages, the calorie content of these food items is reduced or in some cases, practically eliminated, provided that they do not contain calories from other sources, such as carbohydrates, proteins and fat. By using sucralose, it is possible to have low-calorie versions of a wide variety of products, including beverages, ice cream, dairy products and baked goods. These lower-calorie alternatives are useful for persons who are interested in reducing their caloric intake.

Sucralose does not appear to affect blood glucose or insulin levels and can be safely consumed by people with diabetes. Although sucralose is made from sugar, studies show that it is not used as a

nutrient source by the oral bacteria that cause tooth decay and therefore does not increase the risk of dental caries.

Sucralose is considered safe for use by the general population, including children and women who are pregnant or breastfeeding. However, the use of artificial sweeteners or foods made with them is not recommended for feeding young children as they need energy-dense meals to support healthy growth. Pregnant and breastfeeding women should also be aware that their diets should include nourishing foods which provide energy and a range of nutrients and they should avoid excessive amounts of products containing artificial sweeteners which are low in nutrient value, for example, diet soft drinks.

The safety of sucralose and other artificial sweeteners was evaluated by expert scientific committees and national regulatory agencies before approval was given for their use and sale. These bodies include the Joint Expert Committee of Food Additives (JECFA) of the United Nations Food and Agriculture Organization and the World Health Organization, the Scientific Committee on Food of the European Commission, and national regulatory agencies such as the Food and Drug Administration (FDA) of the United States and the Health Protection Branch of Health Canada.

These committees and agencies review the findings of animal and human studies designed to identify any possible toxic effects or threats to human health. These include the assessment of potential risks related to cancer, genetic effects, reproduction and fertility, birth defects, the immune and the central nervous system and metabolism. On this basis, they establish a safety limit of the product or conditions of use that are expressed as the Acceptable Daily Intake (ADI)-the estimated amount (usually milligrams) per kilogram of body weight that a person can safely consume on average every day over a lifetime without risk. They also monitor estimated daily intakes in relation to the ADI. If estimated daily intakes exceed the ADI, there may be limitations on use of the sweetener.

In 1990, after the review of safety studies for sucralose, the JECFA endorsed the safety of the sweetener and allocated 0-15 mg/kg/body weight/day as the ADI. National food safety regulatory agencies then followed suit. In 1991, Canada became the first national agency to endorse the safety of sucralose and approved its use in foods and beverages. In April 1998, the FDA of the USA granted approval for sucralose to be used in 15 food and beverage categories and in August 1999, extended the approval by allowing its use as a general purpose sweetener in all foods. In December 2003, the European Parliament and the Council of the European Union also amended their existing Directive on sweeteners to permit the use of sucrose in a broad range of food products. To date more than 60 countries have also taken similar actions.

At present there appears to be no reason to avoid food and beverages with sucralose. To ensure adequate nutrition, it is important that foods sweetened with sucralose or other approved artificial sweeteners should form part of a healthy diet which includes a mixture of foods from the six food groups used in meal planning in the Caribbean. Persons with diet-related concerns, including those with diabetes and other nutrition-related chronic diseases should consult a nutritionist or dietitian for guidance in meal planning.

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