

CLAIMS

Toothfriendly Labels

Formulate toothfriendly soft drinks to promote oral health among consumers.

BY KATI WEISS, TOOTHFRIENDLY INTERNATIONAL



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To highlight confectionery products that are demonstrably safe for teeth, the Toothfriendly label was developed and established by an expert group from the Swiss University Dental Institutes in 1982.

Today, the registered trademark is governed by non-profit association Toothfriendly International and licensed to 95 brands covering 40 countries.

The use of the Toothfriendly label is high in Switzerland, as 90% of chewing gum products are sold in the counter. In addition to confectionery products, certain medicinal products, baby items and beverages also don the label. However, chewing gum remains the dominating category using the label due to its developed dental proposition.

Director of the association, Dr. Albert Bär, says the turning point for the market acceptance for toothfriendly chewing gum in Europe occurred 20 years ago when Wrigley launched massive oral health campaigns. "Today, we see the biggest need for product development in beverages", he says. "While it is technically challenging to formulate toothfriendly soft drinks, when successful, it would be a significant breakthrough for oral health promotion."

Viabile sweeteners

Food and beverage manufacturers often have the misconception

Polyols such as sorbitol, maltitol, isomalt, xylitol, erythritol and mannitol are suitable ingredients as sugar substitutes.

that all sugar-free products can be labeled as toothfriendly. "Scientific studies show that even relatively low levels of fermentable carbohydrates such as starch and oligosaccharides, as well as sucrose, can lead to a drop of plaque pH in the mouth below the critical threshold value," says Dr. Bär.

Toothfriendly sweeteners should therefore be used to bring the sweetness profile of products to the desired level, as fructose- or glucose-containing ingredients such as fruit extracts may be used sparingly, if at all. In addition, dairy elements cannot be used if they have much lactose in the final product.

Fortunately, intense sweeteners, including stevia, can be used to formulate toothfriendly products. Polyols such as sorbitol, maltitol, isomalt, xylitol, erythritol and mannitol are also suitable as sugar substitutes. Erythritol in particular offers interesting prospects due to its low calorie content and high digestive tolerability.

Besides polyols, non-cariogenic carbohydrates such as isomaltulose and tagatose can also be used as bulk sweeteners in toothfriendly confectionery. Isomaltulose has particularly gained manufacturers' interest due to its pleasantly mild sweetness and non-laxative nature.

Nuts and seeds are used to provide flavor variation in toothfriendly product formulations. Sugar-free marzipan and meringue, as well as coffee extract, herbs and exotic spices such as coconut, pepper and chili can also be used for the same purpose.



Assessing dental risks

The intraoral plaque-pH telemetry test is the most reliable method to assess the dental risks of a product today. This test is generally recognized by dental professionals to identify food and ingredients that cannot be degraded by the microorganisms of the dental plaque to tooth destroying acids.

To qualify for the Toothfriendly claim, foods should not lower the pH of the dental plaque below 5.7 during consumption and for up to 30 minutes after consumption. Moreover, foods containing acids should not expose the teeth to excessive amounts of acid (not more than 40 µmol H+ x min) during consumption. The tests, which are required to determine compliance with these criteria, are conducted on human volunteers. Three university institutes (one in Switzerland and two in Germany) are equipped to perform such tests. A fourth institute will be inaugurated in Beijing, China later this year.



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Challenging fizz

Products with fizzy flavors can however be challenging for formulators to maintain minimal acid content in them. "The majority of the products that do not fulfill the toothfriendly criteria fail due to high acid content," says Dr. Bär. Citric acid, for example, has a direct demineralizing effect on the tooth's surface that may lead to dental erosion, which is the visual disappearance of the surface layer of the tooth enamel.

"Adding calcium will compensate only for some but not all the negative effects of the acids. The most effective way is to lower the acidity of the product and to use acids with low or no buffering capacity." ■



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EFSA says yes to Toothfriendly labeling

In July 2011, the European Food Safety Authority (EFSA) published a positive scientific opinion on the Toothfriendly claim. The favorable EFSA opinion states that foods and beverages that are demonstrably non-cariogenic and non-erosive have the necessary scientific basis to be labeled with the Toothfriendly trademark. In its report, EFSA makes reference to the US FDA, which has accepted the Toothfriendly health claim in 1997.