Xylitol is a nutritive sweetener

Xylitol has been used as a nutritive sweetener for almost forty years. This was made possible by the introduction of a chemical process developed by Finnish scientists to extract xylose ("wood sugar") from birch tree pulp. This was in part motivated by a beet sugar (sucrose) shortage. The Turku University sugar studies, which were conducted in the mid 1970’s concluded that xylitol was safe for human consumption. When xylitol was then offered to the general population it became clear that its use was associated with significant reduction in caries disease (tooth decay). Chewing gum studies in school age children followed.

Xylitol is safe for oral consumption by infants and young children.

Xylitol is naturally found in plums (and prunes) which has been a common food for infants for a long time. K.K. Makinen, in “Biochemical Principles of the Use of Xylitol in Medicine and Nutrition with Special Considerations of Dental Aspects” (pub.Birkhauser Velag, 1978, p.7) states that:

“Virtually all plant material so far studied seems to contain xylitol. According to the present knowledge the richest sources seem to be plums, strawberries, raspberries, cauliflower and endives, in which the concentration may reach 0.3-1.0 g in 100 g dry material. Considerable amounts of xylitol also occur as an intermediate in human carbohydrate metabolism, viz. 5-15 g daily”.

Willgerodt, et.al. (Acta Biol. Med. Ger., vol. 28, p. 651, 1972) reported that xylitol solutions were safely consumed by premature and term newborns in a study of enteral and parenteral nutrition. The babies were fed 0.5-1.0 g/kg as a 20% solution, with no changes noted in serum glucose or lactate levels. Aaltonen, et. al. (Acta Odontol Scand, 2000 Dec; 58 (6): 285-292) tested oral Strep mutans reductions by the use of a novel "fall asleep pacifier" containing xylitol and sorbitol (0.3 gm.) with fluoride on 34 one year old children compared to a fluoride only control group. The xylitol group had no adverse gastrointestinal effects and only 9% had detectable MS at two years of age versus 25% MS detected in the control group. Finally, it should be noted that xylitol has been added to infant dentifrices for a number of years (Gerber Infant Tooth & Gum Cleanser, Laclede/First Teeth Baby Toothpaste). These toothpastes are recommended for use beginning as early as three months of age.

Some nutritionists have expressed concerns about the potential laxative effects of xylitol and other sugar alcohols (sorbitol, maititol) when given in high doses. The xylitol consumption threshold at which gastrointestinal discomfort may occur in humans appears to fall in the range of 70 – 200 grams daily for adults and 40 grams daily for school age children, and with regular ingestion, the tolerance actually increases. This would translate to a daily consumption of 1 gm/kg body weight as safely below the GI intolerance threshold for most humans.

Two additional sources regarding consumption of xylitol are quoted and referenced:

1. "Various slowly absorbed carbohydrates, including sugar alcohols, when taken orally in large quantities, can give rise to osmotic diarrhea. The available data indicate that the severity of such gastrointestinal disturbances, induced by large doses of polyols,
decrease in the following order: mannitol, sorbitol, xylitol. This osmotic diarrhea resembles that in subjects with restricted or frank lactose intolerance. The quantities of xylitol, for example, required to elicit diarrhea are so high that the consumption of xylitol for dental purposes does not cause any problems in children or adults.” from *Effect of Long-term, Peroral Administration of Sugar Alcohols in Man*, Makinen KK, Swed Dent J, 1984;8(3):113-24.


**Xylitol Regulatory Information**

Xylitol is a food or food additive. As for the regulatory agencies, in 1986, the Federation of American Societies for Experimental Biology (FASEB) was commissioned by the U.S. Food and Drug Administration (FDA) to review all relevant data concerning xylitol and other polyols. The FASEB report’s scientific conclusions indicate that the use of xylitol in humans is safe. In 1996, the Joint Expert Committee on Food Additives (JECFA), a scientific advisor to the WHO confirmed the safety of xylitol for human consumption, and gave xylitol an Acceptable Daily Intake (ADI) rating of "not specified", which is the safest category for food additives, implying that the food may be taken daily in the diet over a lifetime without risk. In addition, the Scientific Committee for Food of the European Union has labeled xylitol "acceptable" for dietary uses. The use of polyols, including xylitol, was officially endorsed by the American Dental Association in a 1998 policy statement as part of a comprehensive program, including proper dental hygiene, to promote oral health. Finally, the FDA has approved the use of a "does not promote tooth decay" health claim for xylitol, and more specifically states that "xylitol may be safely used in foods for special dietary uses, provided the amount used is not greater than that required to produce its intended effect."

**Spiffies® Baby Tooth Wipes with Xylitol**

The amount of xylitol in the Spiffies dental wipe is 0.70 grams (2.0 ml of a 35% solution), of which approximately 0.5 gm is delivered to the baby's mouth during the application. Thus 2-4 oral wipes per day will deliver 1 - 2 gms xylitol to the infant's gastrointestinal tract. A typical 4 month old infant weighs 7 kg., so using Spiffies baby tooth wipes as recommended will result in a daily dose of 0.15 - 0.3 gms/kg. This is well below the laxative dose of 1 gms/kg per day.