

XYLITOL

Can it help prevent caries?

Dental caries is the most chronic disease affecting mankind

More contagious than common cold

92% of 20-64 y.o. have 1 filling or more

Flouride has helped but not enough

How are cavities caused:

Bacteria digest dietary carbohydrates

Acid is formed as a bi-product

This acid lowers the pH of the mouth

The low pH causes enamel to break down

Remineralization usually occurs between
acid attacks

Repeated acid attacks cause caries

Factoid:

Teeth are unique in that they are the only body part that are not subject to metabolic turnover. Once teeth are formed they are what they are.

What is xylitol?

A 5 carbon sugar polyol (sugar alcohol)

It is used as food additive and sugar substitute

Occurs naturally in some fruits and veggies

Mass produced from birch tree bark & corn cobs

It has 40% fewer calories than sucrose

It has a very low glycemic index =7 (diabetics)

Approved in >35 countries

Found in gum, candies, baked goods and drugs

How xylitol works:

It disrupts the energy production processes in mutans Streptococci (the main bacteria in caries)

This leads to cell death

Thus reducing the levels of S. mutans in mouth

This leads to a reduction in acid production

The bad stuff:

Too much > 40grams/day causes diarrhea

Toxic to dogs-causes insulin to be released

Give normal sugar as the antidote

STUDIES

Chewing gum study:

Young adults who consumed 6-7 grams of xylitol gum per day had after one year an 80% reduction in caries increment compared to a control group who consumed 6-7 grams of sucrose gum per day.

Montreal study:

A long-term study that confirmed that by using xylitol chewing gum, caries risk can be reduced by 59%. The optimum time for introducing the chewing gum for caries prevention is at least one year prior to the eruption of the permanent teeth.

Milgrom et al study:

Used chewing gum with 3.44g/day, 6.88g/day and 10.32g/day.

Saliva samples taken at start, 5 weeks and 6 months

No difference in S. Mutans between control group and 3.44 group

S. Mutans was reduced in 6.88 and 10.32 groups

No difference between the 6.88 and 10.32 groups

There was no change in other flora.

Xylitol selectively impacts S. Mutans.

2. Xylitol gummy bears w/ 11.7g/day divided into 3 doses in teens
significant reduction in S. Mutans

Xylitol syrup 8g/day effective in preventing caries

Xylitol mouthrinse has been shown to be effective in reducing S. Mutans

Even more effective when combined with chlorhexadine

Xylitol toothpaste also decreases S. Mutans

Holgerson confirmed that continuous and long-term exposure of the teeth to xylitol is required irrespective of whether the medium is chewing gum, toothpaste, mouth rinse or candy.

So TMD patients can also benefit without having to chew gum.

The most effective dose for caries control is 6-8g/day in 3 separate doses.

Xylitol and mother-child transmission of S. Mutans

Infants are more susceptible to bacteria colonization

Infants acquire bacteria via kisses and utensil sharing

Pregnant women used xylitol gum 6-7g/day, chlorhexidine varnish and fluoride varnish (biannually) until child age 2

Colonization % was 10% in xylitol group, 29% in chlorhexidine group and 49% in fluoride varnish group.

At the age of 5 years, the caries occurrence was observed to be 71% lower in the xylitol group compared to fluoride group.

