

 It's not just sugary foods and drinks that are bad for your teeth, other nasties contribute to dental decay.

01. Introduction

Until 1996, the health of Australian kids' teeth was improving, but since then tooth decay has been on the rise. On average, six-year-old children now have two decayed or filled baby teeth, while 15-year-olds have two decayed, missing or filled permanent teeth. Experts particularly blame our increasing consumption of sugary snacks and drinks, including fruit juices; on average, Australians drink about 113L of soft drink per year, an increase of 240% over 30 years. But there are many other foods and drinks that are potentially harmful for teeth.

In collaboration with the Australian Dental Association (Victorian Branch), CHOICE tested 50 foods and 35 drinks, all popular brands and products readily available in most supermarkets.

We compared the sugar content and acidity of 85 processed foods and drinks and categorised them as high, moderate or low risk.

High-risk foods or drinks contain a lot of sugar and also have high acidity. These include some muesli bars and processed fruit snacks; high-risk beverages include soft drinks, fruit cordials and fruit drinks. Unfortunately, many of these foods are promoted as healthy snacks for kids' lunch boxes.

Moderate-risk products either contain a lot of sugar or have high acidity, but not both.

Low-risk products contain less sugar and are not highly acidic.

Foods

All the confectionery products we tested are in the high-risk category. Two brands, Wonka Fruit Tingles and Warheads Juniors Extreme Sour Hard Candy, stand out as the worst. They contain more than 80% sugar, and they're more acidic (with pH values of 2.35 and 2.06 respectively) than any other food or drink on test. They also have high acid reserves, making it harder for saliva to neutralise the acid, so the teeth are exposed for longer.

Of greater concern is the fact that some of the muesli bars we tested, as well as other products promoted for kids' lunch boxes such as processed fruit snacks, fall into the high-risk category. These foods are often sticky, which increases the time the teeth are exposed to sugar and acid. Uncle Tobys Fruit Fix and Robern Frubears also have high acid reserves, further increasing their potential to damage teeth.

Drinks

Fizzy drinks feature prominently in the high-risk category. Market leader Coca-Cola packs 10 teaspoons of sugar into a 375mL can of Coke; it's also very acidic (pH 2.53) as it contains phosphoric acid. Pepsi contains even more sugar and is even more acidic (pH 2.45). Sugar-free diet alternatives such as Coke Zero and Pepsi Max can also damage teeth.

Caffeine-loaded V Energy drink stands out as having a higher acid reserve than most other soft drinks. Fruit cordials such as Golden Circle Pineapple Crush, and fruit drinks such as Pop Tops Apple Blackcurrant Drink, can also be in the high-risk category. Fruit juices, often seen as healthy, can cause dental erosion due to their acidity. Studies show that fruit juices are the most resistant to saliva's buffering effect, followed by fruit-based carbonated drinks.

The Australian Beverages Council argues drinks leave the mouth quickly and are less likely to cause tooth decay than foods that stick to the teeth. However, they can still cause erosion. A study of children in the UK found dental erosion was associated with consumption of fizzy drinks (and to a lesser extent, fruit juices).

02. Our test results Contents:

Allen's Snakes Alive
Capilano Pure Australian Honey
Chupa Chups
Goulburn Valley Fruit & Cereal Bars Tropical Fruits
IXL Strawberry Jam
Kellogg's Nutri-Grain bars
Mentos Fruit 4-pack
Natural Confectionery Company Mixed Jellies
Robern

Frubears Apple
SPC Fruit Sorbet Orange
SPC Get Real Combo Fruit Snacks
SPC Get Real Rude Raspberry Snacks
Sun Apricot Bar
Uncle Tobys Apricot muesli bars
Uncle Tobys Fruit Fix Apple, Strawberry & Grape
Uncle Tobys Yoghurt Tops Raspberry
Warheads Juniors Extreme Sour Hard
Wonka Fruit Tingles 4 pack
X-treme Candy Straps Sour Strawberry
Higher sugar/lower acidity foods </p><p align="justify">Arnott's Iced VoVo
Arnott's Raspberry Shortcake
Arnott's Tiny Teddies Honey
Arnott's Tim Tam Originals
Carmen's Muesli Bites Apricot
Go Natural Berry Pieces in Yoghurt
Kellogg's Coco Pops
Kellogg's Froot Loops
Kellogg's K-time Twists
Kellogg's LCMs Kaleidos
Kellogg's Nutri-Grain
Nestl Milo Cereal
Nutella
Paradise Strawberry Mallows
Sun Sesame Bar
Uncle Tobys Crunchy Apricot muesli bars
Uncle Tobys Vita Brits High Fibre Bites Honey
Lower sugar/higher acidity foods
Ajit's Vege Chips Malt Vinegar
Arnott's Snack Right Fruit Pillow Apple & Sultana
Go-Gurt Strawberry Yoghurt
Heinz Fruit Wobblers Pears in Raspberry Flavoured Jelly
Jols Pastilles Forest Berries Sugar Free
Nestl Diet Yoghurt No Fat Mixed Berry
Nestl Finding Nemo Yoghurt
Sunnyboy Glug Cola
Uncle Tobys Roll-Ups Apple Berry Flavour
Lower sugar/lower acidity foods
Sanitarium Weetbix Kids
Smiths Crisps Original
Smiths Crisps Salt & Vinegar
The Wiggles ABC Letter Biscuits Honey with Yoghurt
Vegemite
Higher sugar/higher acidity drinks </p><p align="justify">Berri Orange Juice No Added Sugar
Coke
Fanta Orange
Fuze Tropical Punch
Golden Circle Apple Juice No Added Sugar
Golden Circle LOL Go Mango
Golden Circle Orange Juice
Golden Circle Pineapple Crush
Golden Circle Sunshine Punch
Just Juice Apple Blackcurrant
LA Ice Cola
Pepsi
Pop Tops Apple Blackcurrant Drink
Red Bull Energy Drink
Sprite
V Energy Drink
Higher sugar/lower acidity drinks
Berri Low Acid Orange Juice
Berri Orange Juice Classic
Sanitarium Up & Go Liquid Breakfast Banana & Honey
Lower sugar/higher acidity drinks
Coke Zero
Cottee's Diet Cordial Lemon Crush No Added Sugar
Cottee's Lemon Crush Fruit Juice Cordial
Diet Coke
Gatorade Fierce Grape
Glaceau VitaminWater Triple-X
Pepsi Max
Powerade Isotonic Lemon Lime
Powerade No Sugar
Red Bull Energy Drink Sugar Free
Sprite Zero
Staminade Lemon Lime Fusion
V Energy Sugar Free
Lower sugar/lower acidity drinks
Milk
Sanitarium Up & Go Vive Low Sugar
Water
How we test
Our tester blends each food with an equal weight of deionised water, then measures the pH and acid reserves (as the volume of base [0.1M sodium hydroxide] required to adjust the pH to 7.0). Familiar to swimming pool owners, pH is a scale of acidity and alkalinity. Strong acids have a pH of 0; strong bases 14. Foods or drinks with a pH below 5.5 can cause erosion of the dental enamel.</p><p align="justify">Cordials are diluted with water following the instructions on the label, while other drinks are tested without adding water; for carbonated drinks, the pH is measured immediately after opening and again after the drink has gone flat. Values for sugar content are taken from the nutrition information on the label.
03.What you can do
Fruit fix</p><p align="justify">
Some fruits themselves can be acidic enough to cause dental erosion. Lemons and other citrus are obvious examples, but white grapes and Red Delicious apples are also fairly acidic (pH 4.03 and 4.37 respectively). Less acidic fruits include bananas and melons. While fruit can be sweet, most of the sugar is fructose. The bacteria in our mouths find fructose harder to deal with than ordinary sugar (sucrose), so fruits are generally less harmful to teeth than processed foods with similar sugar content. </p><p>

Scientific studies consistently point to sugars as the most important dietary factor in causing tooth decay. Less well known is the fact that acidic foods and drinks, even sugar-free ones, can also damage teeth. Acid can directly damage the enamel surface of teeth a process known as dental erosion. A recent survey found 68% of Australian children aged between six and 15 had at least one tooth that showed signs of erosion.

Teeth are made up of thousands of tiny crystals of calcium phosphate that are in a constant state of flux as calcium and phosphate ions move back and forth between the tooth enamel and saliva. Under acidic conditions (pH less than about 5.5), there is a net loss of calcium and phosphate ions from the tooth (a process known as demineralisation).

Tooth decay (dental caries) is caused by bacteria in plaque, which forms as a layer on the surfaces of teeth. These bacteria use sugar for energy, and produce acids as a by-product that can damage the crystals of the teeth. The more often you have sugary foods or drinks, the more acid the bacteria make and the more damage that occurs.

If you only eat three meals a day, with no sugary snacks or drinks in between, the bacteria have only three opportunities to produce acid, so there is minimal damage to your teeth. However, sugary drinks and snacks extend the time the bacteria are producing acid, increasing your risk of tooth decay. As damage accumulates, the tooth can become weak and break down, leading to a hole or cavity that may require a dental filling. If this process continues it can cause complete breakdown of the tooth, the only treatment option for which is extraction.

Dental erosion is caused by acids that come directly from foods or drinks (or from stomach acids regurgitating into the mouth). This acid attack is stronger than that produced by the bacteria in the tooth decay process, and leads to the complete dissolution of the outer crystals of the tooth. Every time an acidic food or drink passes your teeth and drops the pH in the mouth below 5.5, there's a chance the outer crystals are dissolving and reducing the amount of tooth you have left. Fortunately, your teeth are constantly bathed in saliva, which contains protective components such as calcium and phosphate ions that can help repair some of the damaged crystals. Saliva can also wash sugar and acid into the stomach and neutralise some of the acids. However, if sugary or acidic foods are consumed too often and too regularly, the damage they cause cannot be balanced by the repair properties of saliva and damage to the teeth will accumulate. Additionally, saliva also has difficulty neutralising the damaging acids of foods or drinks that are very acidic or have high acid reserves.

7 ways to prevent tooth decay and erosion

If you have a sensible diet, a good flow of saliva, a regular teeth and gums cleaning routine and your teeth get appropriate exposure to fluoride, you're less likely to suffer decay or erosion. So to prevent damage to your teeth:

- Brush twice a day and floss once a day But don't brush your teeth immediately after acidic foods or drinks, as you can wear away the softened enamel before saliva has had a chance to re-harden it.
- Limit (don't snack on) sugary foods and drinks, as these allow bacteria in the plaque to produce the acids that dissolve teeth. Particularly avoid sticky snacks such as some muesli bars that hold the sugar in your mouth for longer.
- Limit highly acidic foods and drinks Using a straw can reduce the contact of an acidic drink with your teeth.
- Restrict high-risk foods and drinks to a once-a-week treat They will do less damage if you have them at mealtimes and if rapidly cleared from the mouth by rinsing with water or following them with a protective food such as an unsweetened dairy product or sugar-free chewing gum.
- Use fluoride toothpaste, as exposure to fluoride can help control the development of decay.
- Drink fluoridated water to stay hydrated instead of sugary or acidic soft drinks.
- Have

regular dental check-ups.

Source: <http://www.choice.com.au/Reviews-and-Tests/Food-and-Health/General-health/Dental-care/Dental-decay/page/Introduction.aspx>