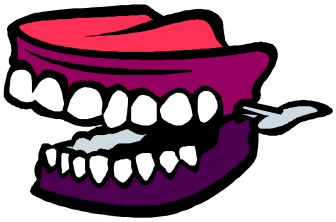
COLA SODA ROTS TEETH

TEACHERS NOTES

Recommended year levels: 5-12

MYTH

Cola soft drink will rot your teeth.



OBJECTIVE

Investigate whether cola soft drink contributes to the decay of teeth.

BACKGROUND INFORMATION

Soda contents include a high fructose corn syrup, additive dye, acid, and caffeine. An average can of soda has approximately 10-12tsp of sugar or 40-48 grams. The pH level in your mouth is normally around 6.2-7.0. At an acid level of 5.2 to 5.5 or below the acid begins to dissolve the hard enamel of your teeth. The pH of most soft drinks, regular and diet, ranges from 2.47-3.35 due to the phosphoric and citric acids. The acid strips the natural protective layer on your teeth (pellicle) and the enamel begins to slowly lose its natural minerals. Continuously sipping soda creates an acid bath for teeth. This softened area is ideal for bacteria to enter. As well, the sugar content in the soda is converted to acid by the bacteria on the teeth. According to researcher Dr John von Fraunhofer, “non cola drinks contain flavour additives which are far more aggressive at eroding teeth than cola drinks.” Some of these additives are citric acid found in orange and lemon sodas.

WHAT YOU NEED

- Teeth (shark, fish, lamb, calf)
- Jar with lid (one jar pre tooth)
- Cola soft drink
- Electronic mass balance (measuring to tow decimal places for fish teeth)

WHAT TO DO

1. Measure the weight of the teeth prior to the experiment.
2. Place each tooth in a separate jar.
3. Pour cola into the jars to cover entire tooth (same quantity for each tooth)
4. Cover with lid
5. Replace cola with fresh soda daily
6. Weigh tooth after each week for 3 to 4 weeks

QUESTIONS

1. Look at the ingredients on the side of the soft drink can. What ingredients might react with your teeth? *Phosphoric acid will attack the enamel on the teeth.*
2. Will diet cola have the same effect on the tooth? *Similar, although it contains artificial sugars, diet cola also contains phosphoric acid which will attack the enamel.*
3. In what parts of the method are errors likely to occur? Discuss how these might affect your results. *The accuracy of the initial weighing, the type of tooth used may not have enamel which the acid breaks down.*
4. What other variables might you test to further investigate this myth? *The type of soft drink, regular and diet, the type of tooth used, the length of the testing period.*

5. Why is phosphoric acid included in the soda? *Phosphoric acid helps to create the carbonated effect in the soda.*

RESOURCES USED TO DEVELOP THIS ACTIVITY

1. Peterson, D. (2008). Pop and Cavities. Cavities in a Can. Accessed: 19 November 2009 from http://www.dentalgentlecare.com/diet_soda.htm#POP%20AND%20CAVITIES
2. Pohl, M. (2009) *Soda Pop – Dental Health.* Accessed: 12 November 2009 http://www.dental--health.com/sodapop_teethenamel.html.
3. Von Fraunhofer, J. General Dentistry, July/Aug 2004 WebMD. Retrieved 24 November 2009 from http://www.webmd.com/oral-health/news/20040611/sodas-canned-teas-attack-tooth-enamel