



Curiosity Guide #306

Skeletal System

Accompanies Curious Crew, Season 3, Episode 6 (#306)

Acidic Exoskeletons

Investigation #7

Description

Investigate what an acid does to various exoskeleton shells and endoskeleton bones.

Materials

- Containers
- Vinegar
- Crab's claw
- Snail shells
- Urchin
- Tooth
- Egg
- Fish bones

Procedure

- 1) Place an object in each container filled with vinegar. Try to submerge the object.
- 2) Leave for 4 to 5 days.
- 3) How did the vinegar effect each tested object?

My Results

Explanation

In addition to calcium, bones also contain phosphorous. However, it is the calcium salts that make bones and shells rigid. Acids such as vinegar can dissolve those calcium salts and leave the bone or shell soft and rubbery. In this experiment, it is possible to see if there is a change between exoskeleton shells compared to endoskeleton, or internal, bones. Because the mineral calcium provides rigidity to bones, it is important for people to eat calcium rich foods like low-fat dairy; green, leafy vegetables like collard greens; beans; and nuts. A person between the ages of 11 and 24 should consume 1,200 milligrams of calcium every day. The elderly must be very cognizant of this as well to avoid osteoporosis.

More to try: Have you ever tried to break a piece of chalk? It's pretty easy to break, even though chalk is made of the same kind of calcium salts that are in our bones. Bones have additional collagen fibers that the calcium surrounds, which makes the bones much harder.

What do you think would happen if you placed a piece of chalk in a cup of vinegar? Would the vinegar dissolve the calcium, or would the vinegar have no effect? Try it!

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