

Calcium Connections Experiment

Purpose of Activity:

1. To introduce the role that calcium plays in the body
2. To introduce healthy foods that provide the body with calcium

Materials Needed:

- My Plate diagram
- 2 lists of calcium sources – one dairy and one non-dairy
- Traditional music with a fast enough tempo for aerobic activity
- 3 cooked chicken bones (meat removed)
- 2 small glass jars with lids
- 1 cup of water
- 1 cup of vinegar

Instructions:

1. Write the word calcium on the white board. Ask if anyone knows what it means. (*a very important nutrient that makes our bones and teeth grow and also keeps them hard*). Tell them that almost all the calcium in our bodies is stored in our bones and teeth.
2. On the My Plate diagram, point to the dairy and vegetable sections. Tell youth those are the two main food groups from which we get most of our calcium (although we can also get a little from other food groups). In the vegetable group, the dark green vegetables are especially good sources of calcium.
3. Make two columns on the white board: one labeled “dairy,” the other “non-dairy.” (If youth don’t know the term “dairy,” define it for them (*milk, or anything made from it – like cheese or yogurt*)).
4. Have two volunteers come up to the white board. Give them a list of calcium-rich foods for each column. Refer to the dairy vs. non-dairy box for suggestions. The volunteers should then take turns writing and leading the group in identifying foods for both columns.
5. If the group gets stuck, tell the volunteers they can help coax the answers out any way they want – like, making words that rhyme with the food they want kids to say, or acting out the food. Talk about the list of foods youth came up with. Once again, stress that low-fat is better than full fat versions (i.e. low-fat cheese vs. regular cheese).
6. Play the music and have half the youth pretend that their leg bones have lost all their calcium so they aren’t hard enough to carry their bodies anymore.
7. The other half of the group still has strong bones. Everyone has to participate in the aerobics the best they can. The group without calcium can wiggle their bodies or slither around on the floor, or just move their upper torsos, or whatever they want to do. But they must participate in

the aerobic/dance routine. Play the music and do the exercise (or dance). When you're done, have all the youth without calcium talk about how it made them feel having to do the aerobics.

Bone Experiment:

1. Help participants start the bone experiment using the last four materials in the "Materials Needed" section above. Explain that the results of the experiment won't be available for three weeks.
2. Ask for two volunteers. Each should put one of the bones into a jar. One volunteer should fill their jar with water and the other with vinegar. The rest of the group should watch as they do this.
3. Ask participants if they have ever eaten acid. When they say no, tell them that in a way they do. Sugar turns into acid if it stays in the mouth for a while. And many foods have some sugar in them – even fresh fruit. If a person doesn't brush their teeth, little pieces of food can stay in the mouth and start turning to acid. Vinegar is an acid. So, this experiment is going to show what acid can do to bones and teeth.
4. Refrigerate both jars for 2 weeks. Then bring them back so participants can see them. Youth should be able to see calcium crystals. Ask them why and then explain:
 - Because the vinegar is an acid, it pulls the calcium out of bone and teeth.
 - In our mouths, tiny pieces of food can turn into acid, and do the same thing to our teeth as vinegar did to those bones.
 - If we don't replace that lost calcium, our bones and teeth can't stay strong and hard.
5. Leave the bones out to dry for another week. After the week is up, have two volunteers break the bones (one each).
6. Ask participants which bone is stronger and why. Explain the following:
 - The one that was NOT in vinegar is stronger because it wasn't exposed to a strong acid that drained the calcium out of it.
 - Calcium is what makes bones and teeth strong. Without it, they get really brittle and weak.

| Where is Calcium? | |
|---|--|
| From Dairy | From Non-Dairy |
| milk (preferably low fat) cheese (preferably low fat) cottage cheese pudding (preferably from low fat milk yogurt) | spinach collard greens broccoli kale canned salmon cooked white beans turnip/beet greens sardines egg yolks tofu tahini (sesame paste) soybeans - plus products often calcium fortified now, like soy milk, orange juice, cereals with calcium added |