

### Activity : Potato osmosis

**Term to glimpse** : osmosis

**From toolkit** : A potato, salt, water (if you have distilled water, that kind is best), a couple of drinking glasses.



#### **Procedure:**

- Osmosis is the key to understanding this issue Fill two glasses with water
- In one of the glasses add 2-3 tablespoons of salt, and stir it in
- Slice up a potato into French fry-like pieces
- Make your observations on these pieces: pay attention to color, how flexible it is, smell, etc.
- Take a guess about how you think these slices might change by putting them into the different types of water
- Dunk the pieces in the water, and then let them sit overnight in it
- Remove the pieces onto a plate and make your final observations

## Explanation:

You will notice some immediate differences in the potato slices. The color of the salted water one is dark brown; not a nice image of how you would like your potatoes preserved! The one in the regular water looks like a nice white freshly cut piece of potato. Moving on to the flexible test, the regular water one again feels firm and crisp (try to break the piece, it snaps!). The saltwater potato is bendy and doesn't snap at all.

. Osmosis is the diffusion of water across a semi-permeable membrane (yikes!) from an area of high concentration of water, to an area of low concentration.

*Semi-permeable membrane:* a layer that only certain things can go through. For example, parts of the potato that water can pass through.

Salt is the key here. Water will move from an area of less salt to more salt (more water to less water), and so when the potato is placed in the saltwater, all the water that is inside the potato (yes, plants have a lot of water inside of them, that's what gives a plant its structure) moves out by osmosis. Thus, the potato gets all flimsy and not crisp anymore. Much like if you were to water all your houseplants with saltwater. They would all get flimsy and then die, and then your parents would be upset so don't try that at home, please.

## Interesting facts

Osmosis is a special type of diffusion, namely **the diffusion of water across a semipermeable membrane**. Water readily crosses a membrane down its potential gradient from high to low potential (Fig. 19.3) [4]. Osmotic pressure is the force required to prevent water movement across the semipermeable membrane.

Osmosis plays a major role in living organisms. It **aids in the transportation of nutrients from cell to cells** and also helps to remove the wastes metabolic products from the cell. The purification of blood in the kidneys is also dependent on the process of osmosis

Osmosis occurs in **both the small and large intestines**, with the majority of osmosis occurring in the large intestine. As your body processes food, it moves from the esophagus to the stomach and then to the small intestine. While there, your body absorbs important nutrients via osmosis.