

DNA EXTRACTION FROM SALIVA

- **OBJETIVE**

- Observation that the chromatin structure is filamentous, so that when we isolate DNA, it appears to our eyes as small threads.



- **THEORETICAL BASIS**

The material basis of heredity is DNA, an acidic substance found in the nucleus of eukaryotic cells (hence the name nucleic acid). There, it is associated with proteins forming chromatin filaments (visible when the cell is at rest) that coil on themselves to give rise to chromosomes, which are visible when the cell divides.

Saliva washes away the cells of the epithelium lining the inner walls of the mouth, which are constantly shedding. Common salt (NaCl), at this concentration, is a hypertonic medium that causes the cells and nuclei to burst, leaving the chromatin fibers free. The detergent fulfills the mission of forming a complex with the histone proteins and separating them from the DNA.

- **MATERIALS**

- Common salt (1.5 g).
- Sodium bicarbonate (5 g).
- Mineral water (120 mL).
- Dishwashing liquid (5 mL).
- Saliva from the mouth (2 mL, approximately).
- 15 mL of ethyl alcohol 96°.

- **METHOD**

1. Each participant receives a small glass bottle or test tube.
2. We take a test tube, where we pour about 10 ml of water (distilled or mineral), a pinch of diluted common salt and a drop of liquid soap. We stir gently with a rod to avoid the formation of foam.
3. Then spit about seven times inside the bottle, which will carry the cells of the buccal epithelium, taking care not to have ingested any food in the previous 15 minutes.
Note: to have a greater quantity of cells, it is recommended to scrape the buccal epithelium with the teeth before pouring the saliva into the tube.
4. Slightly shake the bottle to mix them well, avoiding the formation of foam.
5. Pipette 15 mL of cold 96° alcohol and let it slide down the walls of the bottle.

At the water-alcohol interface, whitish fibers, which are the DNA molecules, immediately become visible. This is... precipitated DNA!. As a complement, these fibers can be collected with a glass rod and stained with methylene blue for observation under the light microscope.

- **ANALYSIS AND DISCUSSION OF THE RESULTS**

- Describe the results obtained and the strategies followed in the process.
- At the end of the experiment, a white, fibrous mucus is obtained, which would be the DNA. Is it possible that the DNA molecule can be visualized with the naked eye? Why?
- From the above answer, what is supposed to contain "the DNA" obtained in the experiment?
- From what sources can DNA be extracted?
- Would we find differences if we had extracted DNA from a plant sample?