Schlüter Biologie

DNA-extraction from a banana, experimentation-kit (KLA-460-150)

There is a lot of talk about DNA these days. Have your students ever seen DNA? The Schlüter kit makes it possible.

Contents of the kit:

Approx. 80 ml extraction medium, 15 filter papers (round filters), detailed experimental instructions.

Approx. 8 ml DNA reagent, 15 wooden sticks 1 funnel

One kit is sufficient for at least 15 single experiments.

For your experiment you will need a ripe banana, spirit or isopropanol (not included in this kit), as well as common laboratory equipment from your inventory such as test tubes, thermometers, etc.

Experimental procedure

Preparation:

- First, place a sealed container containing a few ml of spirit (or isopropanol) in the freezer compartment of the refrigerator. (Hardly more than 5 ml of liquid for one experiment).
- Extract: Cut a 2-3 cm wide piece from a peeled banana. On a cut-resistant surface, first cut the banana into small pieces using a household knife, then, using the flat blade of the knife, mash the banana thoroughly to a pulp.
- Pour a few ml of banana pulp into a test tube and add about the same volume of extraction medium to it.
- Using a wooden stick, stir until a uniform mixture is formed.
- Then immerse the test tube in a water bath (about 60° C) for about 10 minutes.
- Preparation of the water bath: In a large beaker or saucepan, heat tap water to approx. 60° C in a large beaker or saucepan. Absolute temperature constancy is not required. However, too rapid cooling should be be avoided. You can achieve this by using a sufficiently large quantity of water. On the other hand the temperature should not be much higher than 60° C.

Filtering:

- The test material is then filtered. A wide-pored filter paper is suitable paper is suitable, which retains the crushed banana mass but allows the large DNA molecules to pass through.
- The round filter is first folded, placed in the funnel provided and moistened with water. The test material is then poured in. A test tube is used to collect the clear filtrate
- The filtrate should be cooled down for further processing. If necessary, hold the test tube briefly under running cold water.

Precipitation of DNA:

- There are two possibilities for this.

    1. Cover the filtrate with ice-cooled alcohol (or isopropanol). At the interface filtrate-alcohol, a slight turbidity is caused by precipitated DNA. If you now stir the test tube contents carefully with a wooden stick, a colorless, gelatinous mass is formed, which partly hangs on the rough surface of the wooden stick.

    2. Pour a few ml of ice-cold alcohol (or isopropanol) into an empty test tube. Now let about the same amount of the filtrate. DNA will precipitate.

In both cases, you will get a gelatinous mass. This is the DNA.

Identification of DNA:

- Take a DNA sample. To do this, hold the test tube at an angle and “pull” out any adhering DNA with a wooden stick and transfer it to a new, clean test tube.
- Carefully pour off any liquid that may have been entrained. Add about 10 drops of the blue test solution and leave it for about and let it react for about 5 minutes. The DNA sample turns blue.
- Then pour off any excess dye solution, making sure that no DNA flows off with it. If you now fill the test tube with water, you will see the suspended DNA as blue flakes.

Note: The detection is positive if no decolorization of the sample occurs after the addition of water.