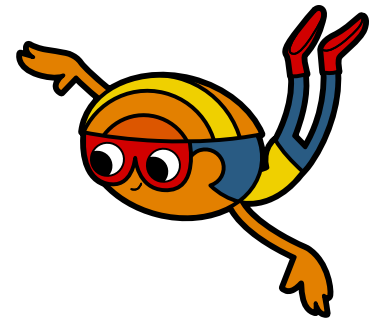


**What does milk do  
not like cola?**



# What does cola do with milk?

Phosphoric acid in cola causes milk proteins to flocculate



## Research question

Fresh cow's milk, condensed milk or soy milk have one thing in common: they contain proteins. These are important for our nutrition. These proteins become solid when they come into contact with a sufficiently strong acid, such as phosphoric acid, which is contained in cola. **How do proteins from different types of milk react with cola?**

## You need:

- Cola
- Different kinds of milk
- Water glasses
- Measuring jug
- Tablespoon



# How to do it

## Step by step



### Measure Cola

Take a measuring jug and pour 100 ml of cola into each of three glasses.

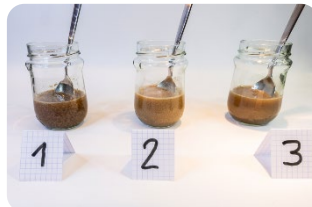


### Add different types of milk

Add one tablespoonful of milk to each glass:

1. Soy milk
2. Condensed milk
3. Low fat UHT milk

The photo shows the glasses immediately after adding milk to the cola.



### After 15 minutes

Observe what has happened: Can you see whether the color has changed in all the glasses? Can you see whether any solids have formed (this is also called "flocculation")? Are there any differences?



### Soy milk after 18 hours

Leave the three jars overnight and look at them again afterwards. What has happened in the meantime? Depending on the type of milk, the proteins have flocculated to different degrees and settled at the bottom of the jars. By adding the acid (cola) the milk proteins could be separated.



# Additional information

For parents and teachers

## Context

This experiment fits in well with the topics of nutrition and chemistry in everyday life: Even natural foods ultimately consist of chemical compounds. This also applies to milk. Whether of plant or animal origin, milk is a source of proteins, and these flocculate in acidic conditions. This can be demonstrated well in the experiment.

## Precipitation of milk proteins

Whether soy milk, condensed milk or normal cow's milk: they all contain proteins, the majority of which are so-called caseins. They are present in the milk in colloidal form, i.e. they are very finely distributed (dispersed) in the liquid. If the pH is changed by adding acids, the form of the proteins changes. They coagulate and precipitate. This is important for the digestion of milk, among other things, but is also used in other ways: for example, in the production of cheese. A suitable acid for the precipitation of milk proteins is phosphoric acid. It is contained in cola, for example, and is used for this experiment.

