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## Germany: Fruits and vegetables - Apple – carrot – raw food salad is healthy.

Easy experiments with vitamins Part II  
Why are carrots orange?

**Beta-  
carotene —  
a precursor  
to vitamin A  
—  
is essential  
for growth and  
good vision!**

### Materials and tools

- 2 small beakers (a small cup)
- 2 glass rods
- 1 grater
- some water (ca. 10 ml)
- 1 small carrot
- coconut fat (Palmin)
- heating plate for melting coconut fat (only one)
- 1 bigger beaker (cup)
- 1 spoon



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### The process of the experiment

#### Step 1

Grate the carrot and put some of the rasps into the cup (the beaker). (Only very little is needed.)

#### Step 2

Melt the grease (ca. 10 g).

#### Step 3

Pour the melted grease into the cup. The mixture has to be stirred for about 3 minutes and then rest.

#### Step 4

Add about 40 ml of water.

## Observation

The fat gradually takes on the colour of the carrots. It is going orange. After water has been added, the carrot pieces settle down in the colourless water. The fat is on the top and is orange.



## Explanation and Conclusion

Beta-carotene was extracted through stirring and by the coconut oil. After addition of water, a phase separation becomes noticeable for one thing there is the so-called lipophilic phase, in which you can find

the carotene. Secondly, there is the so-called polar phase. At the bottom you can still see the grated carrot (sedimented). It can also be observed, that the colour of the carrots does not rise to the top anymore.

Therefore, it can be concluded that carotene is liposoluble. Lipids are lighter than water and they settle at the top.

**Prepare a  
salad  
together and  
enjoy it!**

## Context

- Skin can have a dark complexion due to carotene.
- Beta-carotene is the preliminary stage of vitamin A, which protects against sun

damage and environmental pollution, is necessary for the human sense of sight because it processes the light and for the defense against

bacteria and viruses.

- Sweet peppers, red cabbage and tomatoes are similar in color and also contain carotene.



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