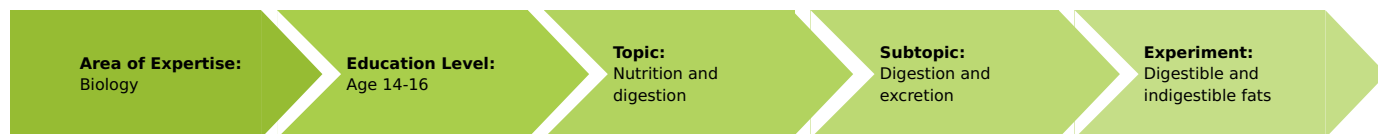


# Digestible and indigestible fats (Item No.: P8013200)

## Curricular Relevance



### Difficulty



Easy

### Preparation Time



10 Minutes

### Execution Time



10 Minutes

### Recommended Group Size



2 Students

### Additional Requirements:

- Margarine
- Lard
- Beef suet
- Black cardboard

### Experiment Variations:

### Keywords:

Digestion

## Task and equipment

## Information for teachers

## Additional Information

The digestibility and hence the wholesomeness of the fats contained in our food depend on the speed with which they can be softened and melted at body temperature. The bile and the enzymes of the digestive juices can attack and decompose melted fats more easily because of their larger surface.

# Digestible and indigestible fats (Item No.: P8013200)

## Task and equipment

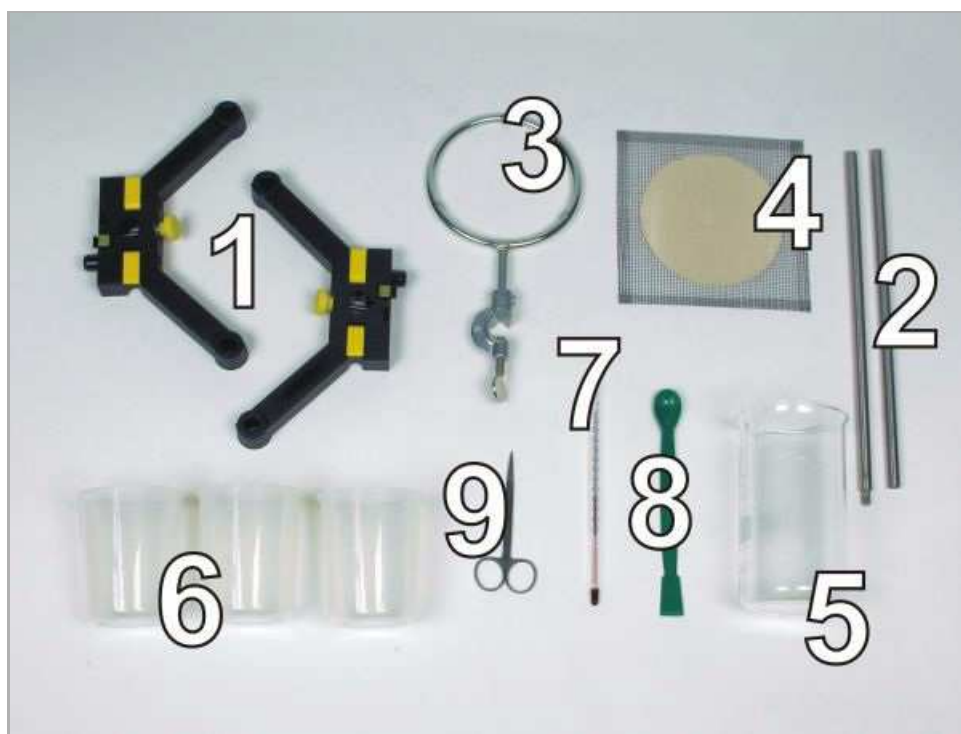
### Task

#### Which fats are easily digestible, which fats are hard to digest?

Examine and compare the digestibility of various kinds of fat.



## Equipment



| Position No.        | Material                                                 | Order No. | Quantity |
|---------------------|----------------------------------------------------------|-----------|----------|
| 1                   | Support base, variable                                   | 02001-00  | 1        |
| 2                   | Support rod, l = 600 mm, d = 10 mm, split in 2 rods with | 02035-00  | 1        |
| 3                   | Support ring, i.d. 130mm,w.boss                          | 37722-03  | 1        |
| 4                   | Wire gauze with ceramic, 160 x 160 mm                    | 33287-01  | 1        |
| 5                   | Glass beaker DURAN®, tall, 600 ml                        | 36006-00  | 1        |
| 6                   | Beaker, 250 ml, low form, stackable, plastic             | 36082-00  | 3        |
| 7                   | Students thermometer, -10...+110°C, l = 180 mm           | 38005-02  | 1        |
| 8                   | Spoon, w. spatula end, 18 cm, plastic                    | 38833-00  | 1        |
| 9                   | Scissors, straight, pointed, l 110mm                     | 64623-00  | 1        |
|                     | Butane burner, Labogaz 206 type                          | 32178-00  | 1        |
|                     | Butane cartridge C206, without valve                     | 47535-01  | 1        |
|                     | Wire gauze squ., copper, 150x150 mm                      | 33290-00  | 1        |
| Additional material |                                                          |           |          |
|                     | Margarine                                                |           |          |
|                     | Lard                                                     |           |          |
|                     | Beef suet                                                |           |          |
|                     | Black cardboard                                          |           |          |

## Set-up and procedure

Cut off three pieces measuring 50 mm x 50 mm of a copper gauze (Fig. 1).

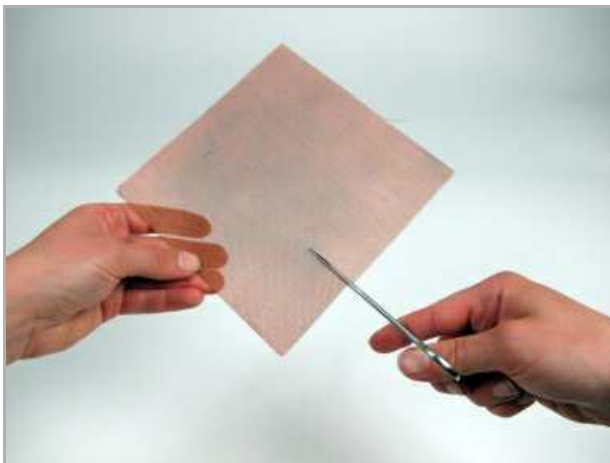


Fig. 1

On one of the three copper gauze pieces place a knob of margarine about the size of a cherry, on the second an equal amount of lard and on the third a piece of beef suet of the same size (Fig. 2). Fold up all the gauze pieces so that the fats are completely enclosed in them (Fig. 3). **Don't confound the samples.**



Fig. 2



Fig. 3

Set up a support stand with the support base and the support rod (Fig. 4 and Fig. 5), fix the support ring to the support rod and lay the wire gauze on it (Fig. 6).



Fig. 4

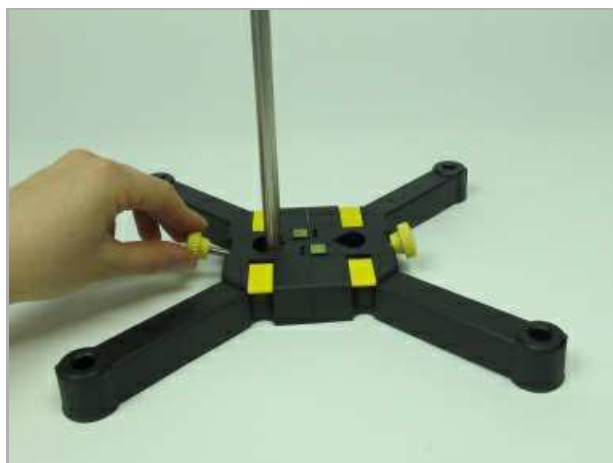


Fig. 5



Fig. 6

Attach the butane burner to the butane cartridge (Fig. 7-8).



Fig. 7



Fig. 8

Fill a 600 ml beaker up to the half with water and place it on the wire gauze. Using matches light up the butane burner place it underneath the wire gauze (Fig.9) and heat the water to 40 °C. Control the temperature with the thermometer.



Fig. 9

Pour out the water in equal amounts into the three beakers of 250 ml capacity each and check the temperature of the water. It should be about 38 °C after being poured into the three smaller beakers – about body temperature.

Place the three beakers against a dark background and put one of the folded up pieces of gauze containing the samples of fat (Fig. 10). **Don't confound the samples!** Mark the beakers before.



Fig. 10

The fat probes begin to melt in the warm water. Observe exactly what happens and write down your observations in the report.

## Report: Digestible and indigestible fats

### Result - Observations

Write down your observations. In which beaker do the first droplets of fat come to the top?

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### Evaluation - Question

Which fat is the most digestible, i.e. the most wholesome? Why? In what order do the other fats follow?

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