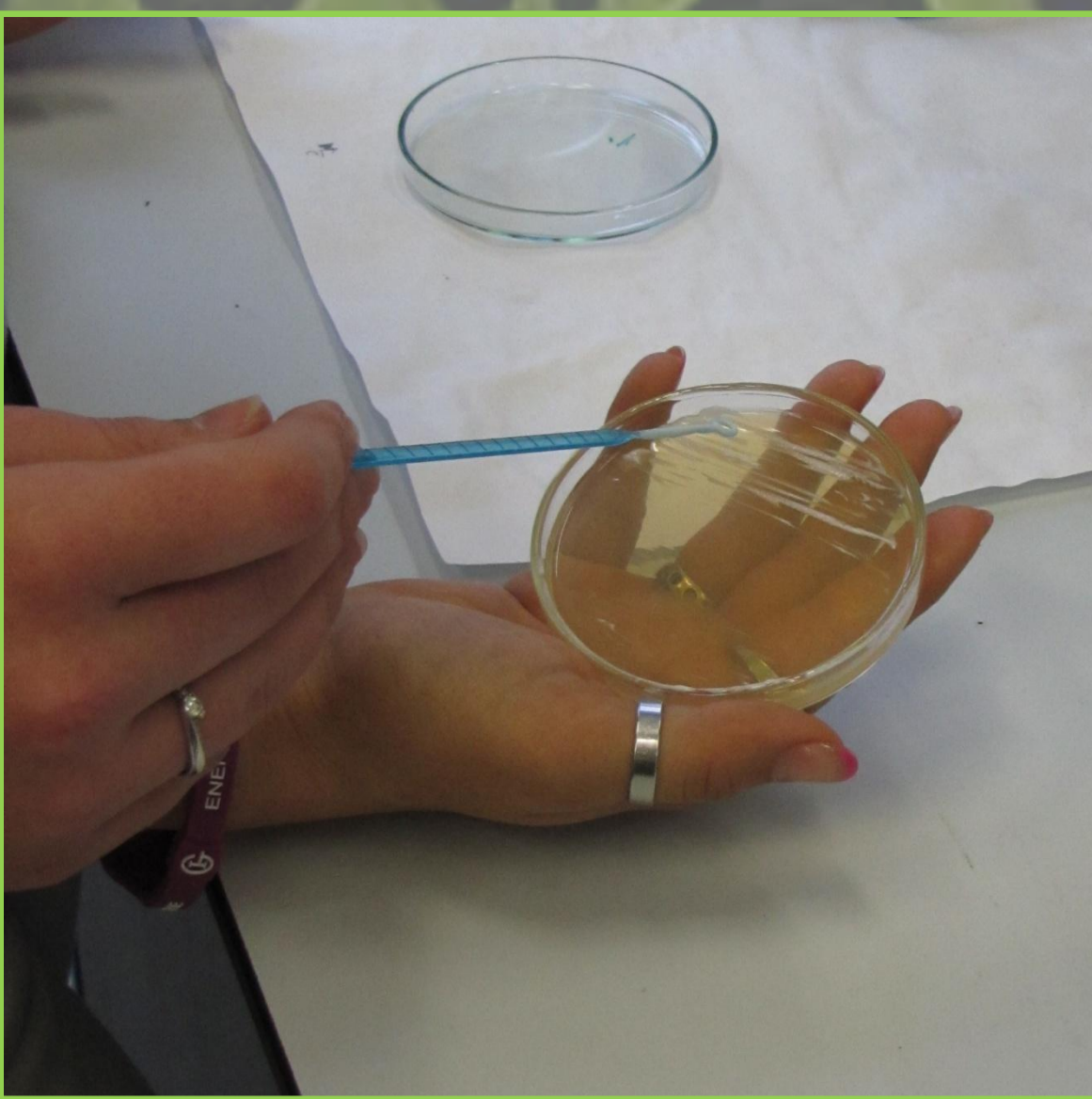


# Microbiology in practice: Are there really any live and active bacteria cultures in yogurts?

## - a methodical contribution -

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### Introduction

- **Yogurts** are a common part of our everyday **diet**. Most of them are claimed to contain **probiotic** bacteria cultures. Among the most common bacteria present in yogurt cultures belong so-called **lactic acid bacteria**, e.g. genus *Lactobacillus* and *Bifidobacterium*, which are well known for their positive influence on the **intestinal microflora** and even for their potential antitumor activity (Gomes & Malcata 1999).
- Since recently **rumours** have been circulating that yogurts actually do not contain any active bacteria cultures, students are wondering if **consuming** yogurts is **meaningful or not**. Thus, they carry out a microbiological experiment to test the presence of probiotic bacteria in yogurts.
- As the poster is intended especially as a **methodical contribution**, most of the poster area is assigned to the section Material and Methods. Only brief selection of students' results together with short discussion and conclusion is shown.

**Aims** 1) to find out if there are **live and active bacteria cultures** in yogurts; 2) to study if there is any kind of **biological contamination** in yogurts

- #### Information survey
- searching for and studying information sources on lactic acid bacteria and yogurts

- #### Yogurt supply
- screening the yogurt supply in supermarkets and specialized health food shops

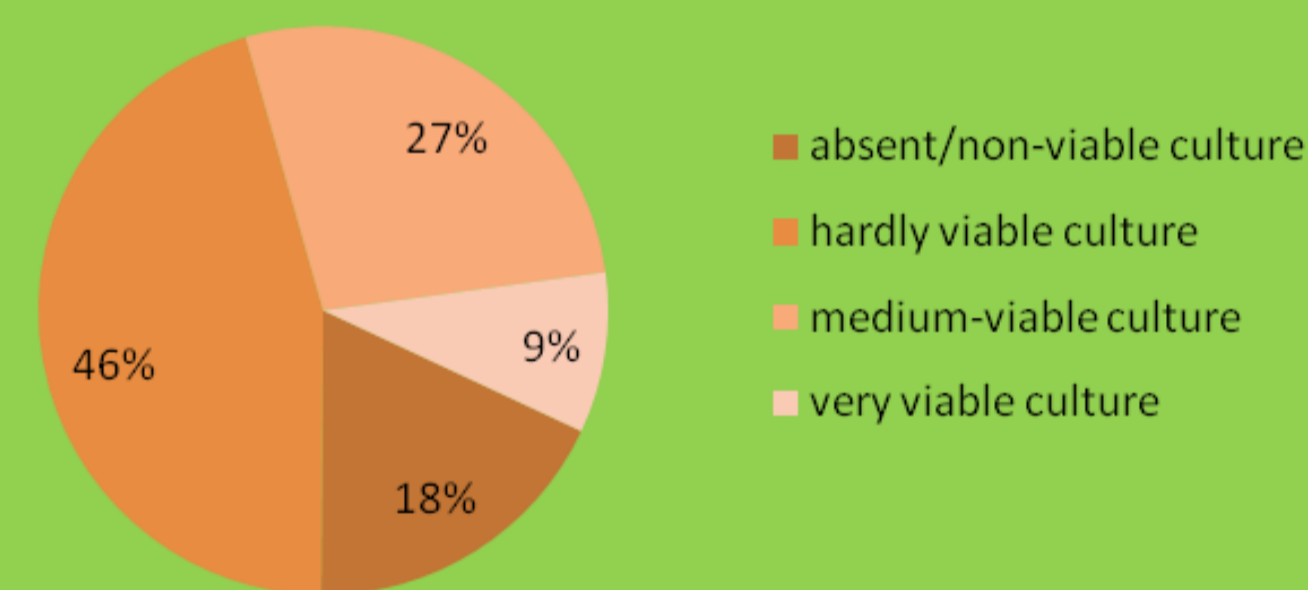
- #### List of yogurts
- discussing and setting up the list of yogurts to be tested

- #### Inoculation
- inoculating yogurt cultures on the agar plate on the Petri dish with the inoculation loop
  - preparing three replications of each yogurt sample

- #### Cultivation
- putting the Petri dish upside down and cultivating it at 20 °C for 5-7 days.

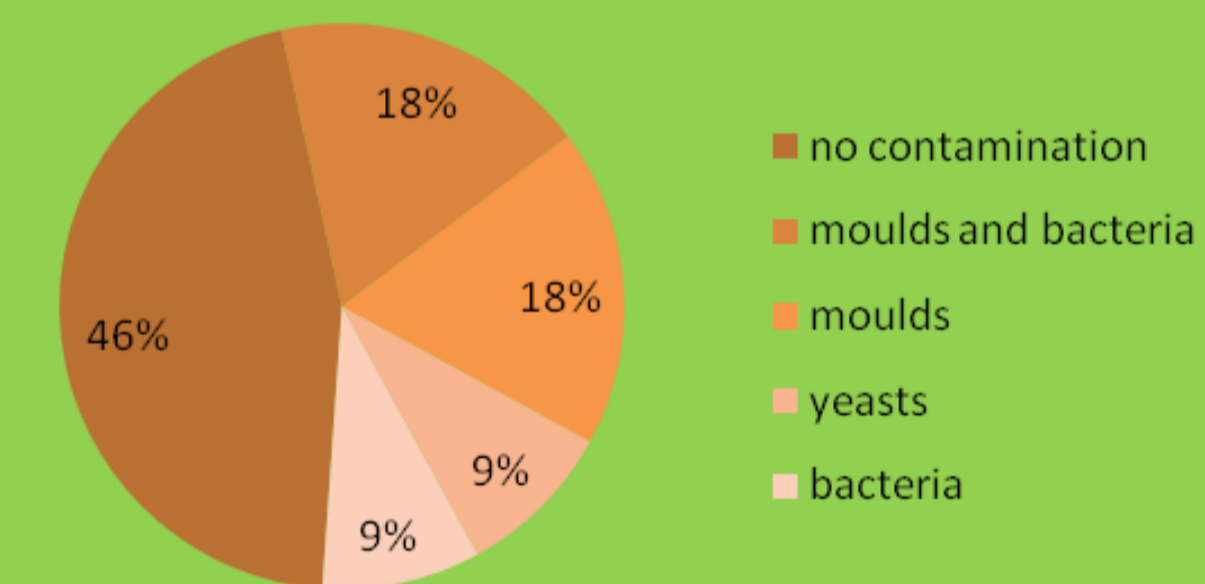
- #### Evaluation
- assessing the presence and viability of lactic acid bacteria on the scale 1-3 (level 3 is the most viable culture)
  - assessing the presence and type of contamination (yeast, mould, other bacteria)

**Viability of lactic acid bacteria culture in tested yogurts**



**Fig. 1** Viability of lactic acid bacteria culture in 11 different yogurts (N=3).

**Biological contamination of tested yogurts**



**Fig. 2** Presence and types of biological contamination of 11 different yogurts (N=3).

### Results

### Material and Methods

START

#### Publicity

- publishing news on the school website

#### Presentation

- presenting the experiment and its results

### Discussion

Results may be **skewed**, e.g. because of the lack of the strictly sterile environment at the school lab. Thus, the contamination of yogurts may originate from somewhere else than from yogurts themselves.

#### Data processing

- transforming the obtained data into the visual form (graphs)

#### Determination

- determining present genera of lactic acid bacteria, possibly of yeasts, moulds and other bacteria
- cooperation with microbiologists from the Institute of Soil Biology, Biology Centre of the Academy of Sciences

### Conclusion and future plans

This practical enables students to use microbiology in practise and to obtain **surprising results** concerning their everyday diet. In the future, **avoiding contamination** from the outside and **higher number of replication** for each sample are planned. The later is essential be able to test the results **statistically** to make them more reliable.

**References** Gomes A. M. P. & Malcata F. X. (1999): *Bifidobacterium* spp. and *Lactobacillus acidophilus*: biological, biochemical, technological and therapeutical properties relevant for use as probiotics. Trends Food Sci Technol. 10: 139-157.



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