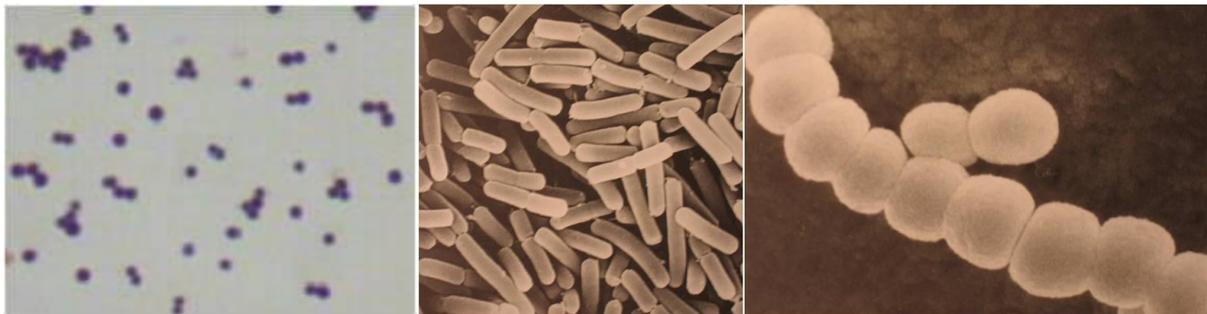


## Technical sheet 1

### Cultures



**Lactic Acid Bacteria (LAB)** are microorganisms with a round or a rod-shape, that can **produce lactic acid** as a result of **anaerobic carbohydrate fermentation**.

They play an essential role in milk products either added deliberately or arising from environmental contamination (e.g. the surface of udder, animal faeces, human skin, tools etc.)

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Characteristics of Lactic Bacteria:

- they are important for human health
- they are competitors with pathogenic bacteria
- they produce lactic acid
- they produce proteolytic enzymes, which are essential for ageing cheese
- they produce aromatic compounds that give cheese unique flavor.

The improvement of the GHP in raw milk production and milk pasteurisation is the cause of decreasing lactic bacteria in milk. This is the reason that it is a good practice to introduce selected lactic bacteria (starter) into milk to make cheese and fermented dairy products.

**Indigenous cultures** can be created **directly from milk** of hand milked animals or; **from the whey** in lactic technology or pasta filata technology.

**Commercially** are available **direct-to-vat** inoculation **cultures**, DVI, (freeze-dried, liquid or frozen forms) or **semi-direct cultures** of selected strains used as a preliminary inoculum to obtain in quantity bulk starter.

The use of acidifying cultures is not compulsory, but where they are employed for technological or hygienic purposes, the following good practices are recommended.

## Commercial Cultures

### Cultures Origin and Supply

- Do not use cultures, which are suspect, poorly preserved or that have passed their expiry date
- Check the condition of the cultures upon arrival
- Use different strains of starter on a rotation scheme to avoid phage contamination

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### Cultures Dosage and Preparation

- Wash hand and work in a clean place using clean equipment
- For liquid commercial cultures do not pipette directly



- Use the correct dose; where the volume of milk does not correspond to the dose in the sachet, cultures may be diluted in 1 litre of UHT milk or boiled milk and the required dose of the culture measured proportionally. The preparation may be preserved before use at 4°C and must be used within two days after dilution at the latest, stored in a sealed container



- Before introducing to the vat, the cultures can be added to a small quantity of warm pasteurized milk and stirred to obtain a homogeneous solution
- Note: the temperature of the milk in the vat should be suited to the culture used
- Commercial cultures should be stored at the temperature recommended by the manufacturer. Cultures are stored at a cold temperature, away from humidity and light, and used within their expiry date.

## Indigenous Cultures

The level of microorganisms in raw milk that is produced in a modern dairy system can be very low. The level of lactic acid bacteria can be even lower. It can be very difficult or even impossible to select the fast acidifiers. For a safe product, good acidification is very important. When your starter is not active enough, buy a commercially available starter.

To make an indigenous starter from milk follow GMP points in technical sheet n.2.

To make an indigenous starter from whey follow GMP points in technical sheet n.3.