

Technical sheet 3

Making indigenous starter from WHEY

Indigenous cultures obtained from whey are generally used for hard cheeses, pasta filata cheeses and lactic coagulation cheeses.



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- This kind of indigenous cultures are sometimes called ***Sieroinnesto***
- **Good Whey** to make ***Sieroinnesto*** comes from **Good Milk and Hygienic preparation yielding an excellent cheese**; use **milk from animals in very good health**, in according with regulatory requirements

- The **tools** to keep the whey must be **clean and disinfected**



- For hard cheeses and pasta filata cheeses select a microbial thermophilic population composed of ecotypes of *Lactobacillus helveticus*, *Streptococcus thermophilus*, *Lactobacillus bulgaricus*
- Take the whey from cheese processing; pay attention that the working process has respected the desired parameters and that the resulting whey has good organoleptic characteristics
- It is important to **keep the temperature of whey between 44-48°C** to reach the desired acidity
- It is important to know the **specific development temperature** for the more important thermophilic strains present in the sieroinnesto; slightly **varying the temperature** can favor growth of one type over, another allowing **different proportions of bacterial strains** in the culture with consequent slightly **different levels of acid production**

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Ecotype	Max growth Temperature	Max whey acidity
<i>Streptococcus thermophilus</i>	46 °C	26 °SH/50
<i>Lactobacillus bulgaricus</i>	48 °C	30°SH/50
<i>Lactobacillus helveticus</i>	48°C	30°SH/50

From "Trattato di Tecnologia Caseria" di Salvadori del Prato



- For lactic coagulation cheeses select a microbial **mesophylic population**, and **keep the temperature of whey between 20-25°C until reaching desired acidity (11-14 °SH/50 for whey from cow or goat milk and until 14.5 – 17.5 °SH/50 for whey from sheep milk)**
- Take the whey from cheese processing; pay attention that the working process has respected the desired parameters and that the resulting whey has good organoleptic characteristics. (light color, pleasant acid taste/flavour)

Whey used as a culture must be stored in a clean place and in a clean container. In order to avoid a loss of acidifying capacity, **whey must not be stored for more than 3 days**. Its use may be postponed by freezing, but it should be used within **10 weeks at -18°C**.

It is Good Practice **before freezing to cryoprotect the whey** with the addition of sterile milk; either powdered, boiled or UHT. **Whey should not be refrozen after defrosting**.

The procedure is as follows:



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place a portion of whey and an equal part of sterile milk in a **sterile container**. It is very important to use containers easy to clean and sterilize.

It is good practice not to freeze too large quantities (max 1 litre) to avoid slow freezing, which could favor the creation of ice crystals with subsequent damage to the bacterial cells.

The freezing of good whey, with excellent performance in terms of acidification, can also serve as a backup of the culture in case of failure.