FETA CHEESE QUALITY

Food Processing Optimisation

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Course Presenter

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Feta Quality

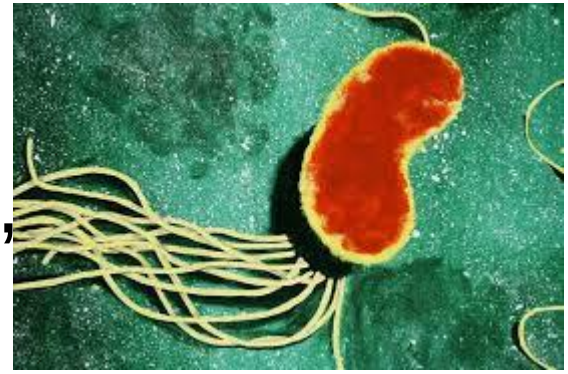
- Feta is a relatively simple cheese to make
- In the cheese family classified as pickled Cheese or white brined cheese,
- Traditionally dry salted then stored in brine

Use of lipase

- Traditionally feta was a raw milk sheep cheese,
- Adding lipase will give a more traditional flavour

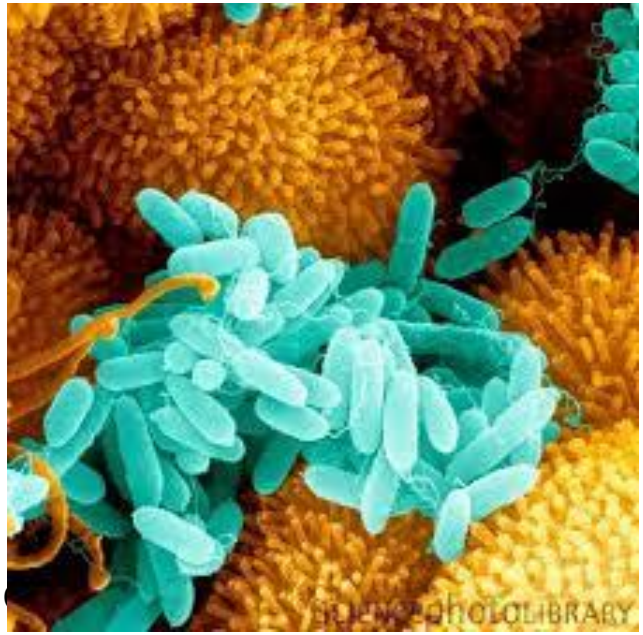
Milk microbial contamination

- *Pseudomonas spp.*
  - Grow at low temperatures, vat
  - Destroyed by pasteurisation



Milk microbial contamination

- Produce heat stable enzymes that can produce bitterness & rancidity
- Enzymes also break down casein, reducing yield



Milk age

- Fresher the milk is always better
- Optimum less than 12 hours
- If you are using cheese 2-3 days old there will be poor flavours

Defects due to Cheese making Process

- Coagulation
- Draining
- Brining

Coagulation

- Consistency
- Temperature
- Acid production
- Cut size

Cultures

- Relatively quick acid producer
  - Normally mesophilic *Lactococcus lactic ssp. lactis* and *cremoris* mix
  - Cheddar cultures
  - Robust acid production

Acid production

- Acid production in vat
  - Decrease in pH
  - Loss of calcium & phosphate
  - pH and mineral content at draining
- Texture & flavour
- Require pH about 4.8 morning after manufacture

Acidification impacts

- When acid produced
- Quickly in vat favours dissolving calcium phosphate out of curd, thus giving a fractured body
- Affected by temperature

Acidification impacts

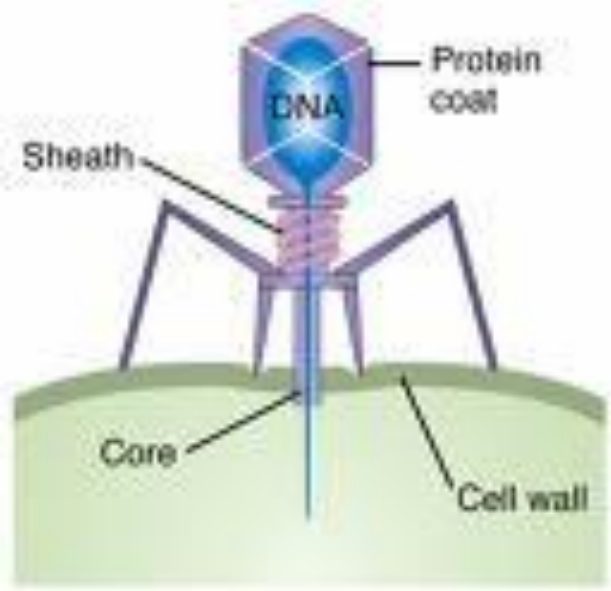
- Low acid/high pH
  - Higher moisture
  - Increased enzyme activity = off flavours, bitterness
  - Risk of other bacterial contamination
  - Atypical flavours

Starter Inhibition

- No or little acid production
- Phage
- Chemicals
- Antibiotics
- Starter Rotation

Phage

- Virus that attacks bacteria
- Can cause death of starter bacteria
- Clean up the curd!



Fermented Flavours

- Fermented flavours indicate microbial contamination. They tend to show up in cheese which has a slightly high pH.
- Added botanicals can be an issue

Botanicals

- Fresh herbs and vegetables.
  - Reputable supplier
  - Heat or chemical treatment
  - Dairy Food Safe Victoria Note
- https://www.dairysafe.vic.gov.au/resources/technical-information-notes/product
  - Cheese and botanicals in oil

Feta defects

- Dry Hard Body
  - Excess acidification
  - high whey drainage
  - Hard curd
  - Have you over stirred
  - Has milk composition changed

Feta Defects

- Blowing of containers
  - Contamination of the brine with gas forming bacteria
  - Yeasts
  - Plant sanitation

Yeast & Mould Contamination

- Common in environment
- Ceilings, conveyors, damp spots
- System for cleaning and sanitising these areas
- Use of foams, not high pressure
- Rotate sanitisers to maximise impact

Slime

- Traditionally slime formed by microorganisms in environment after dry salting
- Washed off by brine, but proteinases into cheese, particular flavour and texture vary from factory to factory,
- was part of the normal process

Slime

- Prevention good brine and hygiene control

Defects

- Soft body
  - Surface softens can become like thick mud
  - Discolour to brown, yeast & moulds, smell sulphur
  - Very rare if normal pH and moisture,

Soft body

- Low acid, high moisture
- Favours proteolysis enzymes and bacteria
- Body broken down because proteins are broken down
- Cheese also absorbs water from brine
- Ensure pH below 4.8 and brine concentration higher than cheese

Brine – *Salt in Moisture*

Key control factor is not only the salt content but the *Salt in Moisture* or Brine content

Salt in moisture

= Salt/ Moisture content of cheese

E.g. if 3 % salt and 50% moisture

Salt in Moisture = 3/50

= 6%

Brine – Salt in Moisture

- When making up brine solutions for final packaging suggested aim is at least 2% higher than cheese *salt in moisture*
- Therefore if 3% salt gives 6% *Salt in Moisture* then brine must be at least 8%
- Be careful if you change the cheese making and produce a higher or lower moisture cheese

Salt uptake

- Affected by temperature
  - Lower temperature – slower uptake
  - Brine concentration
  - Size of block
  - Surface area exposed
  - Be consistent

Ropy brine

- Starters, avoid EPS producing strains (used in yogurt)
- Avoid post pasteurisation contamination
- Use potable water for making brine

Early blowing

- 1-2 days, small holes – coliforms
- Large holes – yeast
- If in feta made from pasteurised milk would indicate massive contamination issues where growth of contaminant is greater than starter growth.
- Check the hygiene and starter activity

Mould on surface

- Keep cheese covered with brine
- Room hygiene

Packaging in brine

- Brine should be above cheese salt in moisture
- Normally 7-12%
- Should cover surface
- Cheese should take up most of volume.

Vacuum Packing

- Allow to drain after removing from brine
- Pack after 1 week to allow brine to penetrate to middle – size dependant
- Ensure no cheese in seal area
- Check for leakers

Thank You