FETA CHEESE QUALITY

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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

  – 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 proteininases 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