FERMENTED MILK PRODUCTS

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INTRODUCTION

- Milk is a white liquid nutrient rich food produced- mammary glands of mammals.
- Milk is extremely perishable and various methods are employed to preserve it ,the most prominent method is fermentation.

FERMENTATION

Fermentation is a metabolic process in which an organism converts a carbohydrates such as starch and sugar into alcohol and/or acid.

Classification of Fermented milks.

ACID - ALCOHOL

HIGH ACID

MEDIUM ACID

LOW ACID

PRODUCTION OF FERMENTED MILK

- **Traditional Method**

  Natural method -Whey of milk added to fresh milk

- **Commercial Method**

  Specific bacteria –fermentation **(pure culture technique is applied)**

ACIDOPHILUS MILK

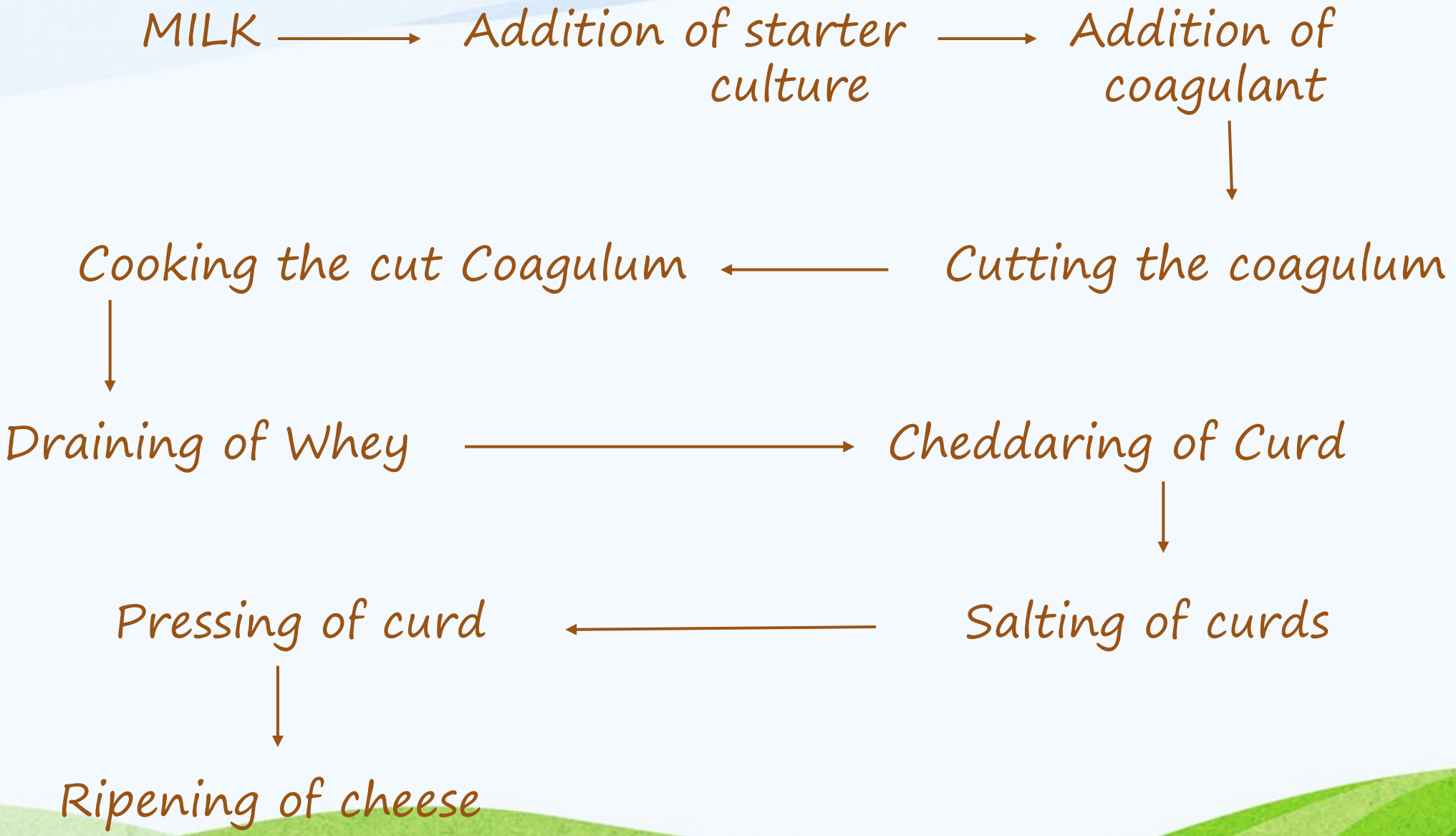
CHEESE

- Cheese is the fresh or ripened product obtained after coagulation and separation of whey of milk ,cream or partly skimmed milk ,buttermilk or a mixture of these products.

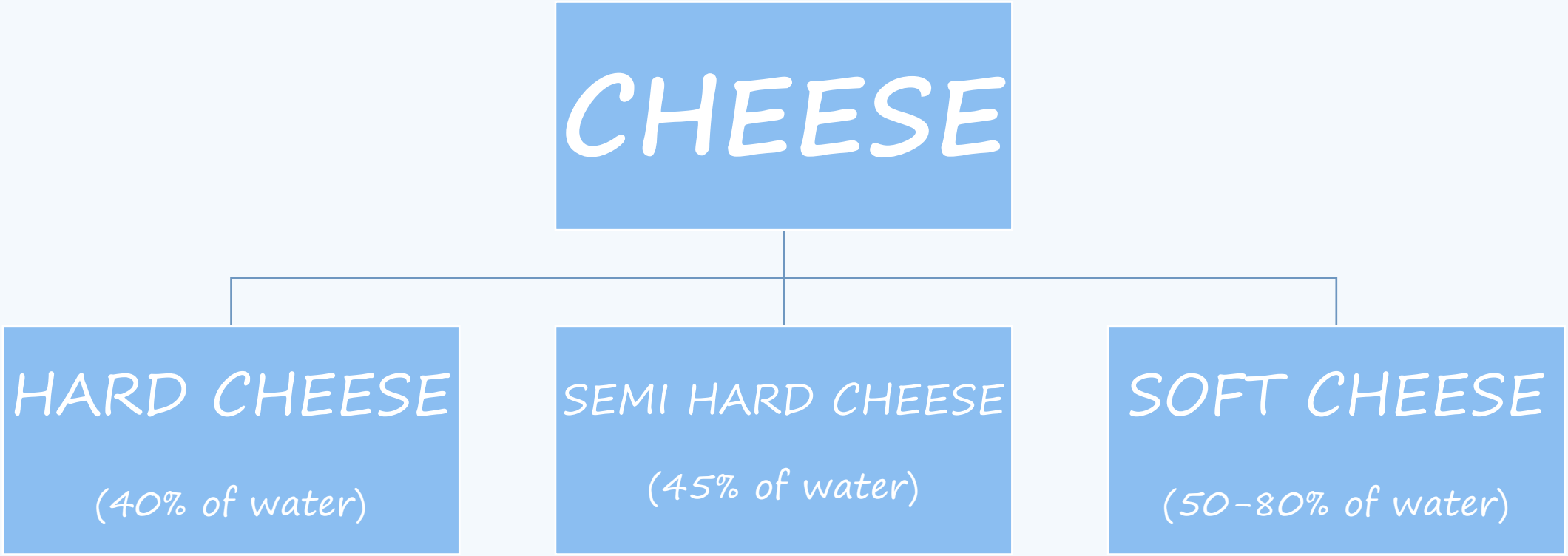
(cheese is milk curd and made of casein)

- **1000 Varieties of cheeses** have evolved that are characteristic of various regions of the world.

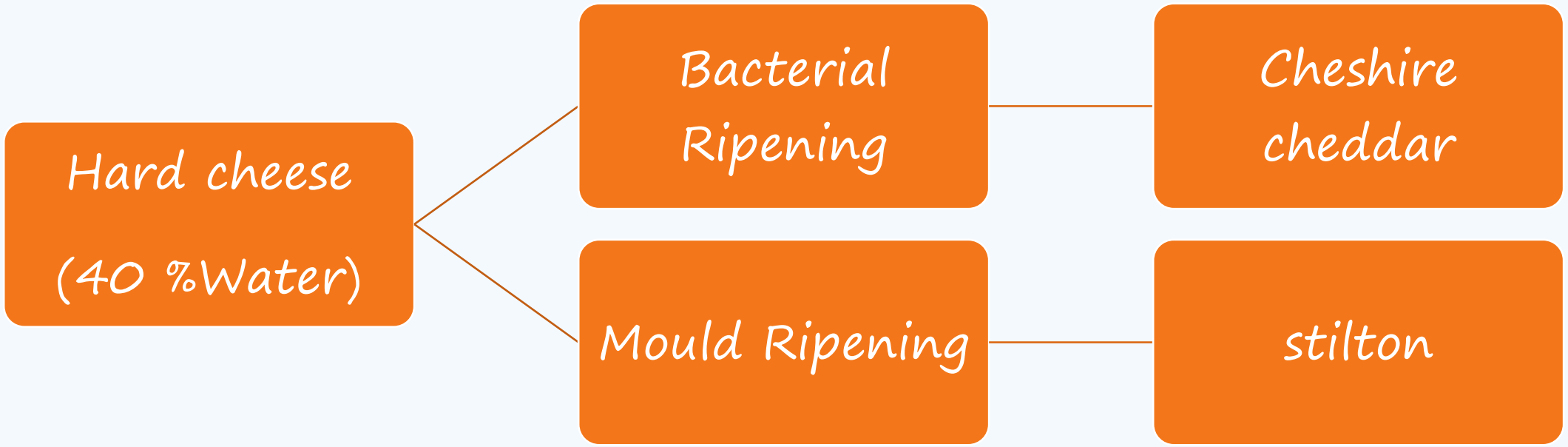
STANDARD CHEESE -PROCEDURE



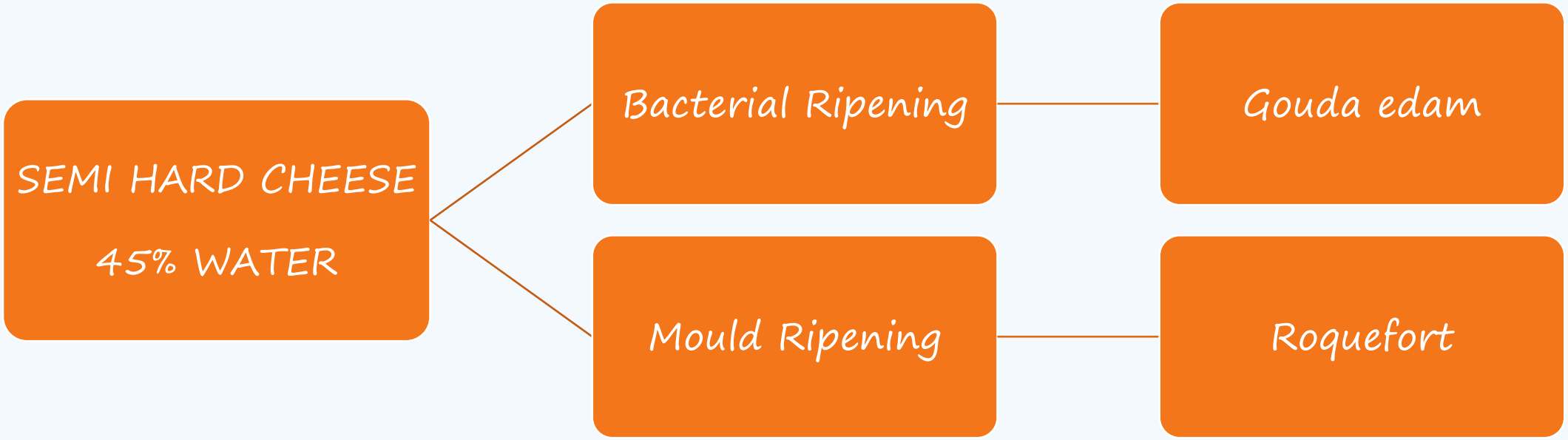
Types of cheese



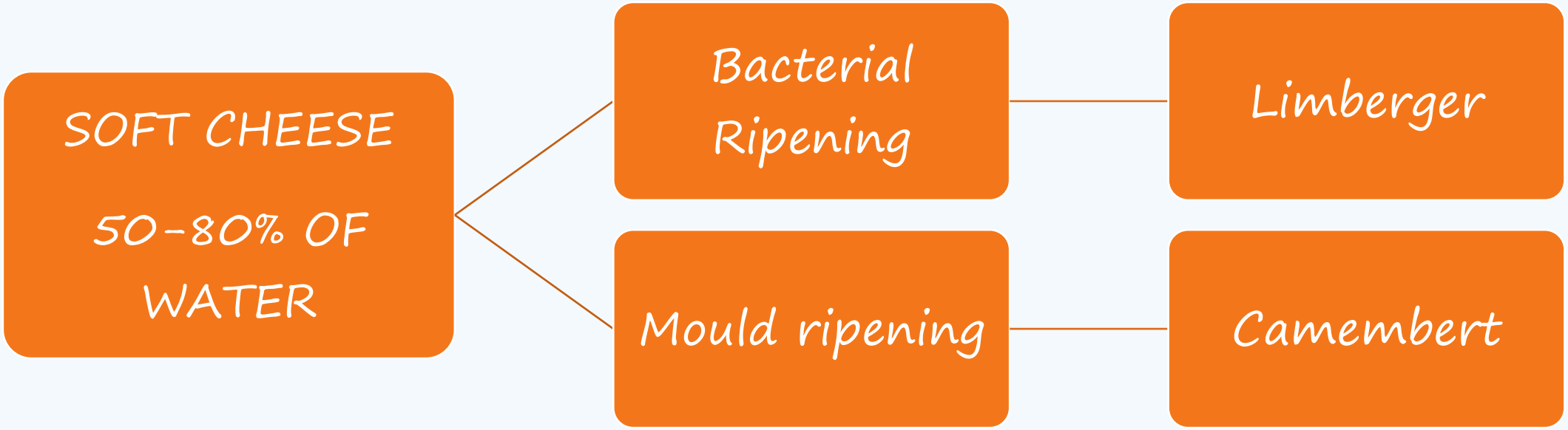
CHEESE


Hard cheese
(40 %Water)
Bacterial Ripening
Mould Ripening
Cheshire cheddar
stilton

CHEESE

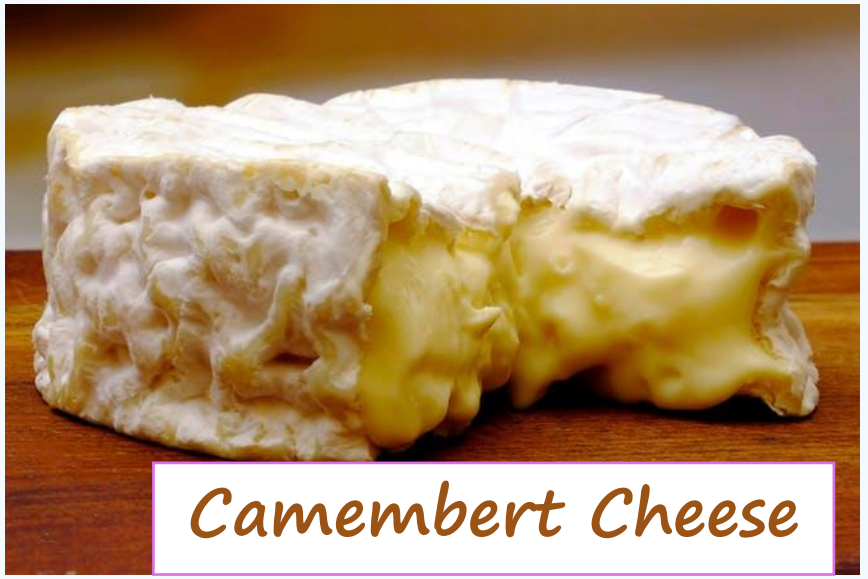

SEMI HARD CHEESE
45% WATER
Bacterial Ripening
Mould Ripening
Gouda edam
Roquefort

CHEESE


SOFT CHEESE
50-80% OF WATER
Bacterial Ripening
Mould ripening
Limberger
Camembert

Top 10 cheeses

Roquefort Cheese



Camembert Cheese

Feta Cheese

Cotija Cheese

Chevre Cheese

Top 10 Cheeses

Mozzarella Cheese

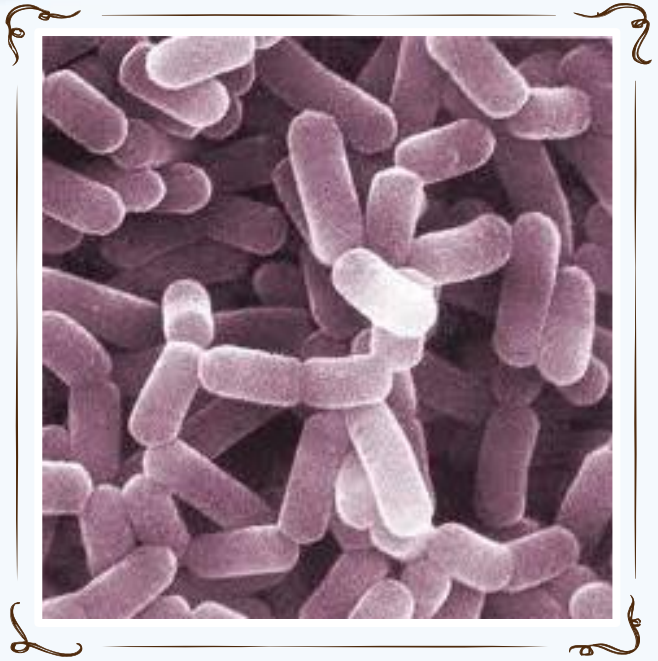
Manchego Cheese

Gouda Cheese

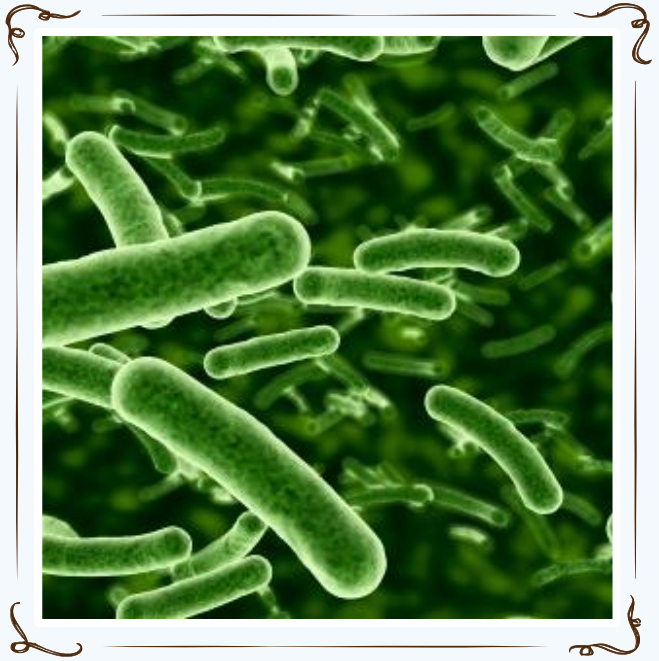
Camembert Cheese

Moneterey Jack Cheese

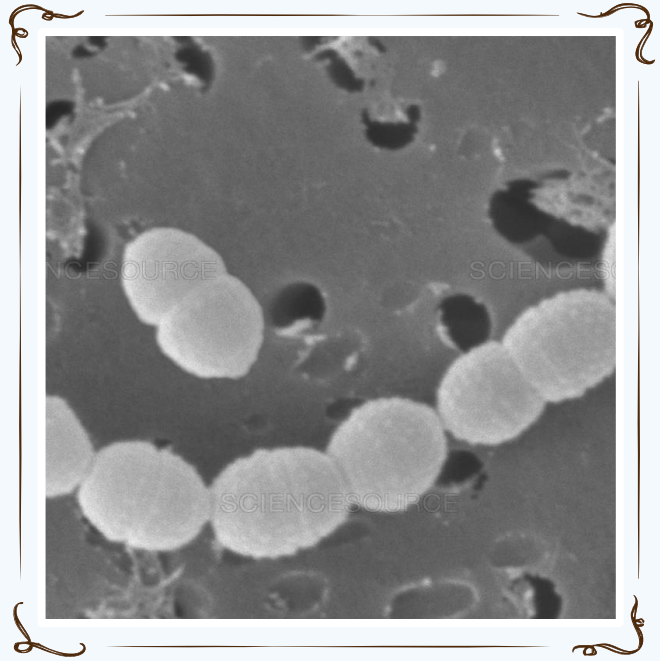
Microscopic view of Micro-orgranisms



Lactobacillus Casei



Lactobacillus Plantarum



Steptococcus cremoris

CHEESE SPOILAGE

Lactic acid bacteria

- Heterofermentative produce gas and off-flavour

  Lactobacillus brevis,Lactobacillus pseudoplantarum
- L.Casei Produce soft bdy defect
- Pink spots-Propionibacterium,Lb.bularicus,yeast.
- White crystalline deposit on the surface

  Facultatively Heterofermentative Lactobacillus

  Lactic acid production-insoluble Calcium lactate

BUTTER

- Butter is a mixture of milk fat ,butter milk and water.
- Fat content of butter is 80%
- Non-fat components of butter 20%
- It consists of moisture, milk solids not fat and salt if added.

Butter is made from sweet or sour cream

BUTTER

- Cream is pasteurised at 62.8 degree Celsius- 30 minutes (Immediately cooled)
- Desirable microorganism is added .
- Streptococcus cremoris or lactobacillus lactis-Ferments Lactose which produces Lactic Acid(milk curdles)
- Cream is allowed to ripen @ 21.1 deg. Celsius for several hours.
- Ripened cream –Churned.

BUTTER

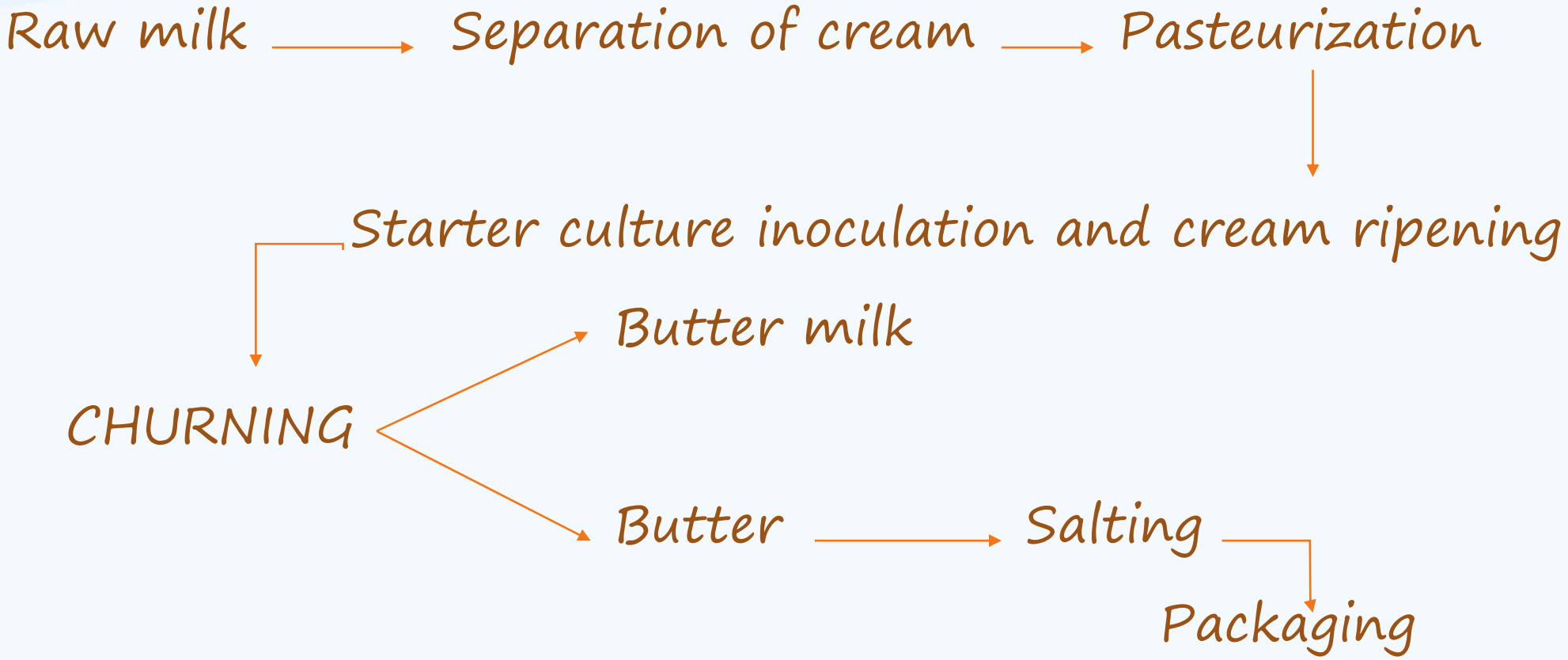
- The colour of the butter varies from yellowish white to deep yellow.
- Did you know: why this yellow colour Annatto seeds?
- Pasteurised table butter should be stored at 80 degree Fahrenheit to maintain good quality and prevent deterioration.
- **BHA-Butylated hydroxyl anisole** –effective as preservative to enhance the shelf life at 0.02 % level stored at 25 degree Celsius and lower.

BUTTER

- Spoiled butter– Result of hydrolysis of triglyceride molecules.
- The disagreeable odour and flavour are due to the release of free butyric and caproic acids from the triglyceride molecules.

Butter is characterised by spreadability

OVERVIEW OF THE BUTTER MAKING PROCESS



SPOILAGE OF BUTTER

- **Surface Taint (Putridity)**

P.Putrafacience at 4-7C

Off odour-organic acid ,isovaleric acid

- **Rancidity of the butter-hydrolysis of butter**

P.fragi,P.flurescences

SPOILAGE OF BUTTER

- **Off-flavour**

Malty flavour-Lactococcus maltigenes

Cheesiness-lactobacilli

Barny flavour- Enterobacter

Flatflavour – Pseudomonas

Uncclean flavour – Coliforms

Ester like flavour – P.fragi

Fishiness- Aeromonas hydrophilia

SPOILAGE OF BUTTER

- **Discolouration**

Dark, Smoky or greenish areas-Alterneria,

Cladosporium small black spots- Stemphleium

Green Colour –Pencillum

Brown area –Phoma and Alternaria

Bright reddish –Pink area- Fusarium culmorum

Pink colour – yeast

Black discolourations-P.nigrifiacans

SUMMARY

- Milk is a liquid –nutritious food
- Fermentation and its product.
- Cheese Preparation.
- Types of cheese
- Butter preparation.

Reference

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THANKYOU