

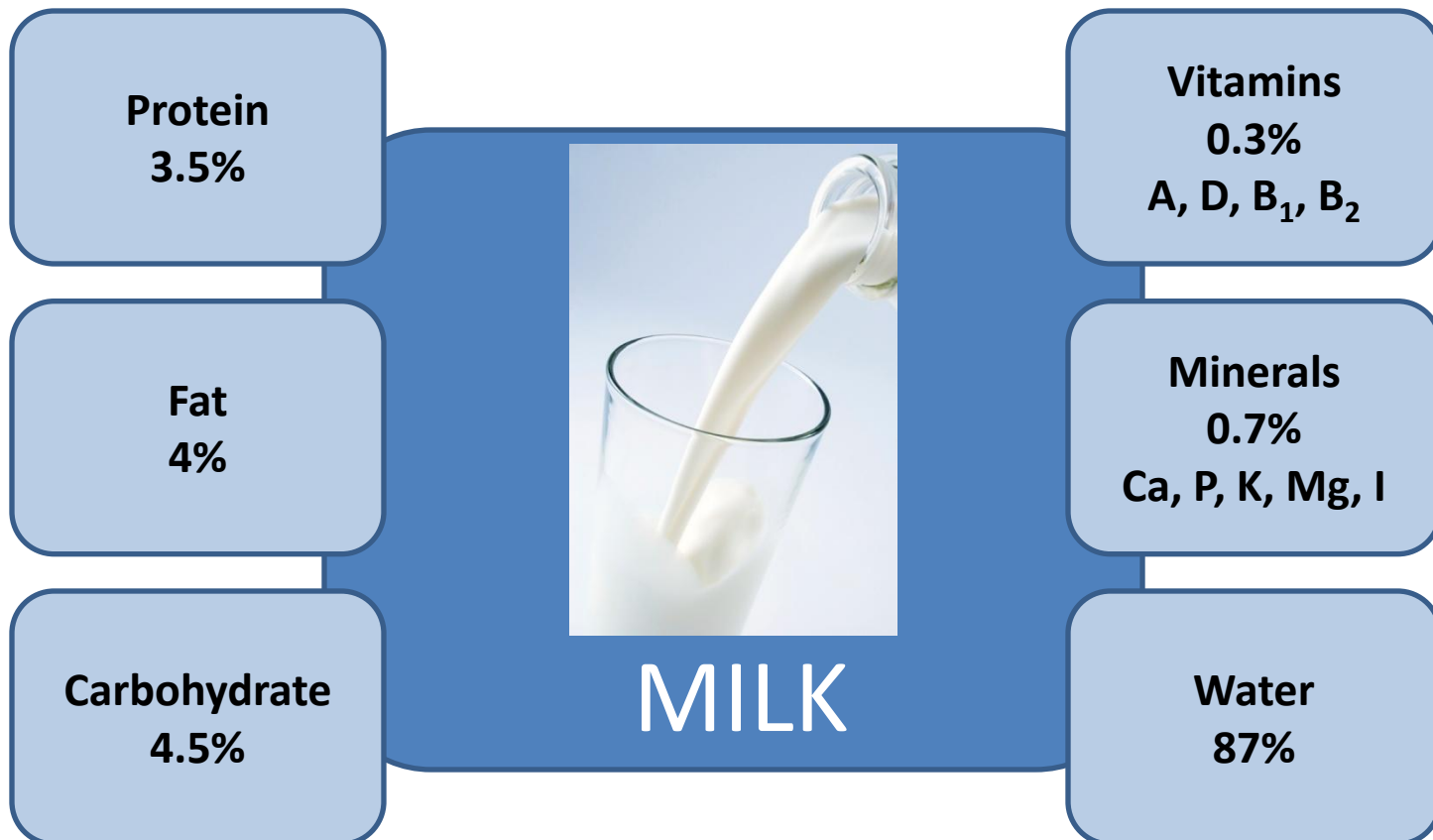


# Milk






# Nutritive Value





|               | Fat      | Calcium |
|---------------|----------|---------|
| Full fat milk | 4%       | 124mg   |
| Low fat milk  | 1.6%     | 124mg   |
| Skimmed milk  | 0.1-0.3% | 136mg   |





## Dietetic Value of Milk

- Milk contains HBV protein for growth and repair of body cells
- It is a source of fat and carbohydrates which provide energy
- It supplies calcium, phosphorus and vitamin D for healthy bones and teeth
- It is easy to digest
- Economical
- Versatile– suitable for sweet and savoury dishes





Full Fat

Low Fat

Skimmed

Dried

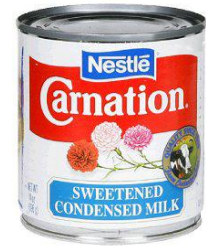
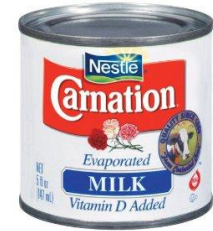
# Types Of Milk

Evaporated

Condensed

Fortified

Lactose Free





# Fortified Milk

Fortified milk has extra calcium, folic acid and vitamins A, B, D, and E added.

**Calcium**

Strong bones and teeth

**Vitamin A**

Normal vision and healthy skin

**Vitamin B<sub>2</sub>**

Release of energy from food

**Vitamin B<sub>12</sub>**

Healthy blood and nervous system

**Vitamin D**

Aids absorption of calcium

**Vitamin E**

Anti-oxidant

**Folic Acid**

Aids a healthy pregnancy and foetal formation



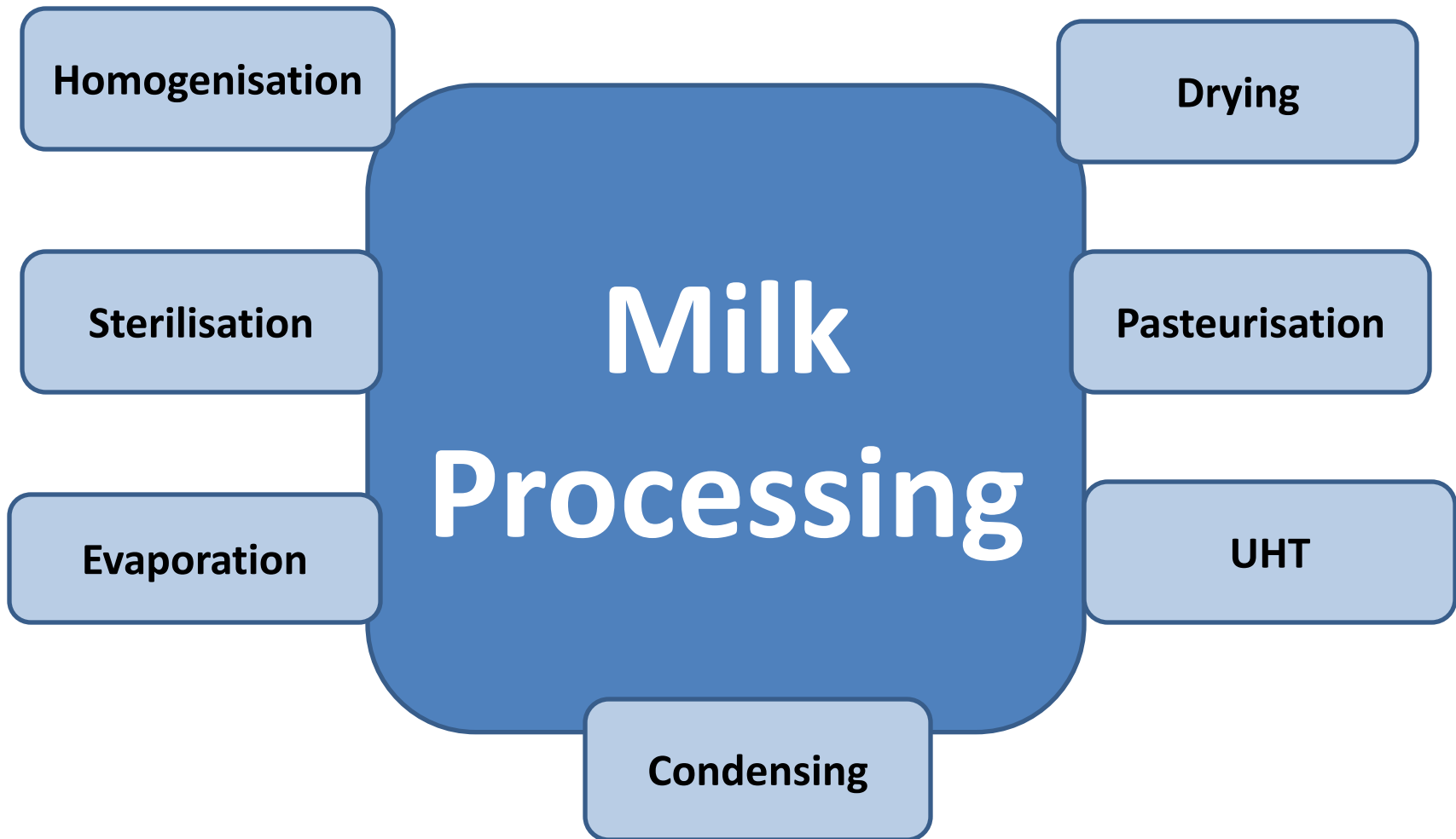
Fortified milk is now available as whole milk or low fat milk.



# Lactose Free Milk

- People who are lactose intolerant /sensitive cannot convert lactose (sugar naturally occurring in milk) to glucose
- For this reason, lactase is added to milk to convert the lactose to glucose prior to consumption









# Homogenisation

## Why?

To break down large, fat globules into small fat particles and distribute them evenly throughout the milk.

This helps avoid a layer of cream floating on top of the milk.

## How?

- Milk is heated to 60°C
- Milk is forced under pressure through tiny holes
- Fat globules break into tiny droplets

## Effects

- Smooth creamier milk which has the same composition throughout
- No change in nutritive value



# Pasteurisation

## Why?

To destroy any pathogenic bacteria.

## How?

- Milk is homogenised
- Milk is heated to 72°C for 15 seconds
- Milk is cooled quickly to 10°C
- Milk is packed

## Effects

- Pathogenic bacteria destroyed
- Prolongs shelf life
- All Vitamin C is destroyed
- Some Vitamin B<sub>1</sub> is destroyed



# Sterilisation

## Why?

To destroy pathogenic bacteria and prolong shelf life.

## How?

- Milk is homogenised
- Milk is placed in bottles and sealed
- Bottles are heated to 110°C for approximately 30 minutes
- Bottles are then cooled

## Effects

- Pathogenic bacteria are destroyed
- Vitamin B<sub>1</sub>, B<sub>3</sub> and Vitamin C are destroyed
- Sweeter taste
- Creamier texture
- Keeps unopened for several weeks



# Ultra Heat Treatment

## Why?

To destroy all bacteria killed so shelf life can be extended to 6 months once unopened.

## How?

- Milk is homogenised
- Milk is heated to 132°C for 1-3 seconds
- Milk is cooled and then packed in a sterile environment

## Effects

- Pathogenic bacteria are destroyed
- Keeps for up to 6 months unopened and unrefrigerated
- Vitamin B<sub>1</sub> and Vitamin C are destroyed
- Slight change of flavour





# Evaporated Milk

## Why?

To lengthen shelf life and double the concentration of milk.

## How?

- Milk is evaporated to half the original concentration
- Milk is pasteurised
- Milk is homogenised
- Milk is sealed in cans
- Can and contents heated to 115°C for 20 minutes

## Effects

- Twice as concentrated as fresh milk
- Flavour and colour are altered
- Vitamins B<sub>1</sub> and C lost
- Bacteria are destroyed
- Increased shelf life once left unopened



# Condensed Milk

## Why?

To increase sugar content so it can be used in desserts.

## How?

- Milk is homogenised
- 15% sugar is added
- Milk is evaporated to one third the original quantity
- Milk is heated to 80°C for 15 minutes
- Milk is cooled and canned

## Effects

- Flavour and colour changed
- Sugar content increased
- Bacteria are destroyed
- Shelf life extended
- Vitamin C and B group vitamins are destroyed



# Dried Milk

- **Roller Dried**
- **Spray Dried**

## Why?

- Extended shelf life
- Convenient for transporting

## How?

### Spray Drying

- Milk is homogenised
- Milk is pasteurised
- Milk is sprayed into a hot air chamber
- Water evaporates from milk droplets
- Fine powder forms and falls to bottom of chamber
- Powder is cooled and packed in airtight container



## Roller Drying

- Milk is homogenised
- Milk is pasteurised
- Milk is poured onto heated revolving drums
- Milk dries and sticks to roller
- Dried milk is scraped off by knives
- Powder is cooled and packed in airtight containers





## Effects

### Spray Drying

- Loss of Vitamins C and B group and amino acids
- Bacteria are killed
- Long shelf life once it remains dry
- Reconstitutes easily
- Expensive method of processing

### Roller Drying

- Loss of Vitamins C and B group vitamins
- Cooked taste
- Difficult to reconstitute



# Culinary Uses of Milk

- Drinks – tea, coffee, milkshakes, hot chocolate
- Puddings and sweets
- Sauces and soups
- Glazing baked goods
- Baking – bread, scones
- Savoury dishes – quiche





# Milk Quality

The Department of Health in conjunction with the Health Service Executive and Local Authorities are responsible for maintaining standards relating to the production and processing of milk.

Milk is an ideal medium for bacteria to grow so quality and safety measures are very important.

Bacteria which cause salmonella, campylobacter and e-coli 0157 can be found in unpasteurised milk. Therefore, unpasteurised milk cannot be sold in Ireland.



