INTRODUCTION

- Is a biochemical change brought about by the action of certain yeast or bacteria on certain food substances.
- A gentle bubbling condition.
- First applied to the production of wine by Pasteur.
INTRODUCTION

➢ Type of fermentation varies according to the type of food, the nature of fermenting agent and length of time that process takes.

➢ Can be performed on commercial bases to produce bulk products for supply and can be performed on home scale measures also.
BENEFITS OF FERMENTATION

- Easily digestible.
- Fermented food products are a good source of vitamins.
- Have high biological value of energy.
- Serves to fulfill satiety value.
- Products have higher shelf life like wines, beers, pickles.
- Provide variety in textures and flavors.
VINEGAR

- A strong acidic liquid.
- Also known as glacial acetic acid.
- If distilled from a fermented product then has no colour and a neutral flavour.
- If prepared from jaggery may have brownish colour and somewhat sweet flavour.
COMMERCIAL PREPERATION

Fermentation of sugar to ethyl alcohol
Sugar + Yeast --- Ethyl alcohol + carbon dioxide
➢ Yeast- Saccharomyces Cervisiae

Oxidation of alcohol to acetic acid
Ethyl alcohol + Yeast + Acetics --- Acetic acid (VINEGAR) + Water
➢ Acetics- Gluconobacter
BREAD

- Most popular bakery product.
- Wide in variety --- taste, texture, size, shape, colour etc.
- Generally cereal based product like wheat, corn, rice, maize, etc.
- Can be prepared on small scale as well as commercial levels.
INGREDIENTS

➤ Flour – The gluten present responsible for elasticity and easy handling.
➤ Water – Dissolves sugar & salt & serves as dispersion media for yeast cells.
➤ Dry milk – Increases texture & flavour of the dough.
➤ Salt – Used as a flavouring agent, strengthens gluten and control the rate of fermentation.
➤ Sugar – Necessary for yeast growth, brown colour and sweetness of the bread.
DOUGHS
INGREDIENTS

- Fats / Oils – Gives tenderizing effect & improves the volume.
- Ammonium phosphate and sulphate – Used as yeast nutrients, encourage yeast growth and accelerate the gas production.
- Potassium iodate & Calcium peroxide – Improve handling characteristics of the dough.
- Yeast – Acts as leavening agent, acts on sugar & yield carbon-dioxide and alcohol.
STRAIGHT DOUGH METHOD

- All the ingredients are mixed together, form soft dough and allowed to rise.
- Temperature is maintained at 25 – 27°C
- Kneaded by hand or mechanically to remove gas released i.e. knock back, and allowed to rise again till the bulk is doubled.
- The dough is allowed to remain at 38 - 48°C in certain moulds for a time period of 40 – 60 min. and then baked for 30 minutes.
BEER production

80°C Enzyme

70°C Amylase

50°C Protease

Brewer's malt (malted grains)

Mash

starch→sugars

Incoming wort is boiled

Fermenting beer

Hop separation and

Brewery yeast Sacch. cerevisiae

Fermentation (sugars→alcohol) 1-2 weeks

Young beer

Beer tanks

Fairy tale about a cock and a hen (adapted): barley→mash→water→wort→hop→young beer

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CANNED BEER BOTTLES
BEER PROCESSING
BEER FERMENTER
PREPARATION

- **Steeping process** – Soak the barley in water in a big tank for 4 – 5 days at room temperature.

- **Malting** – Put those grains on floor (malting floor) & blow hot air over them. The germ of the barley is killed then and malt is partially caramelized. This is also known as pit roasting.
PREPARATION

- **Mashing** – Broke down these grains in crushed form and dissolve the sugar in hot water. Add the sugar syrup into grains to make a solution known as grist. Sugar used may be cane sugar, liquid glucose or invert sugar.
PREPARATION

- **Hopping** – Add hops to grist and heat again at higher temperature.
- **Pitching** – Mixture is cooled down and is pitched with yeast to start fermentation. Lower down the temperature of mixture by keeping it in a dark place. Use a container of huge capacity larger than the mixture’s quantity. And kept it aside in a dark place for 7-8 days.
PREPARATION

- **Filtration** – Filter the mixture for obtaining clarified crude beer. And beer is kept then in a chilled storage tank allowing carbon dioxide to release and remain inside to produce sparkling effect.

- **Canning** – Canning is followed sometimes by pasteurization and stored in dry cool places at lower temperature or the temperature below room temperature.
CHEESE INTRODUCTION

- Preparation depends on the geographic area and cheese to cheese.
- Made from milk of cows, goats and sheep's & rarely from mare, camels, yak, buffalo, zebu, water buffalo etc.
- Good cheese requires good milk.
- Rennet play an important role, consist of a pair of enzymes- chymotrypsin and pepsin that originates in the stomach of young mammals.
CHEESE PREPARATION

- **Cutting the curd** – After addition of some souring agent, whey separates and curd is formed. The captured curd is cut with special knife, to release the whey still present. Over cutting should be avoided.

- **Straining** – Mass of curd is captured in a large cloth. For some special kind of cheese, the strainer can be special scoop, after which curd is passed through other moulding in moulds also.
CHEESE PREPARATION

- **Whey** from the curd in order to make it denser.

- **Stirring** – Else than soft and creamy cheese, other cheeses are passed through other processes as well. Stirring is intended to separate yet further.

- **Heating** – Procedure is generally adopted for hard cheese. This increases the consistency of whey and curd and elasticity by further stirring during heating.
CUTTING THE CURD......
CHEESE PREPARATION

- **Salting** – Not all types but some of the cheeses can be washed with or soaked in brine.

- **Maturing** – After moulding cheese into proper shape maturation is allowed from 2 to 3 days. Every cheese is not allowed to mature.
WINE

- Beverages of fermented grapes or grape juice by yeast.
- Basic procedure introduced by Louis Pasteur.
WINE

- Originated from France.
- Can be produced by the fermentation of fruit, berries, rhubarb, dandelions, honey etc.
- Grape wines are usually red or white.
WINE PREPARING STEPS

Preparing juice – Variety of grapes can be used if a desired level of sweetness is defined prior to the preparation. Grapes are crushed by machine and then treated with sulphur dioxide or potassium metabisulphite. Crushed grapes are called ‘must’.
WINE PREPARING STEPS

- Addition of sugar – 15-25% sugar is added.

- Fermentation – Contents are mixed in a tank twice a day by punching and mixing in a way to aerate and hence encourage the growth of yeast and aid in the extraction of colour from the skin of grapes.
WINE PREPARING STEPS

- Temperature maintenance – 24-27°C for red wine for 3 to 5 days for proper fermentation whereas 10-21°C for white wine that takes 7 to 14 days. These conditions counted as primary or active fermentation.
Secondary fermentation – The fermented juice is drawn off from the residues and placed in a storage tank under a light pressure for 7 to 11 days at about 21-28°C. Here the remaining sugar is fermented and clear wine is drawn off.
WINE PREPARING STEPS

- Storage and aging — Cooled, filtered and transferred into wooden tanks or plastic coated concrete tanks for aging. Tanks are filled completely and sealed air tight. Aging for months or years is carried out in bottles that results in desirable changes in wine’s appearance and flavor. After aging the wine is filtered, clarified, & sometimes pasteurized.
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YOUR SUCCESS  YOUR DREAMS

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