



Lesson 4

Food Science and technologies



ROAD MAP

- **Food Processing**
- **Food Ingredients Sources**
- **Halal Ingredients**
- **Haram Ingredients**
- **Questionable/Mashbooh Ingredients**
- **E-codes**
- **Requirements for Halal Food Processing**

Food Processing

Set of methods and techniques used to transform raw ingredients into food or to transform food into other forms for consumption by humans or animals either in the home or by the food industry.



Aims of Food Processing

- Have safe and sure food products

- To improve safety and freshness of products

- Improve and control the functionality of food constituents

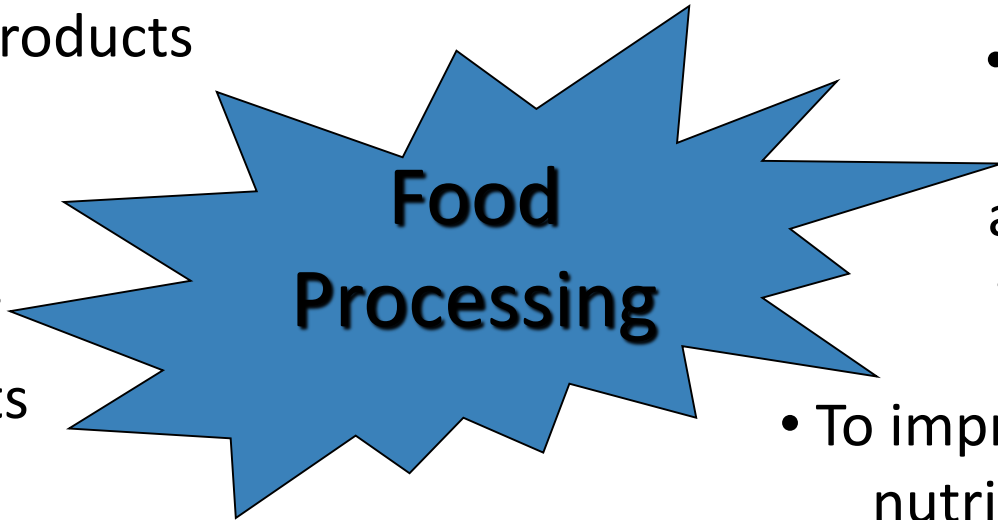
- Increase the storage life of food products

- Isolate specific compounds and exploit the biological potential of constituents

- Development of traditional and innovative food products

- To improve or maintain nutritional values

- Keep quality and typicality of food products

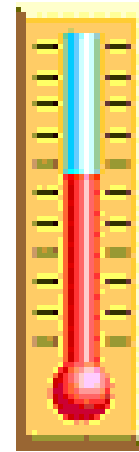


Methods used for Food Conservation

Processing and conservation improved by an adapted packaging


(sterile, impenetrable to water, etc.)

- **Methods using coldness**
 - Refrigeration
 - Freezing
- **Methods using heating**
 - Pasteurisation
 - Sterilisation
 - UHT processing
- **Methods by dessiccation**
 - Concentration (liquid food like milk)
 - Drying
- **Other methods**
 - Filtration
 - High pressure
 - Ultra-sounds
 - Pulsed electrical fields



Food Ingredients Sources



- Animals (Milk, Eggs, Meat, Seafood)
 - Plants (Fruits, Vegetables, Spices, Seafood)
 - Synthetic (Flavours, Colours, Additives)
 - Fermented (Organic acids, Cultures, Enzymes)
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Groups of Food Ingredients-1

Preservatives

Sweeteners

Color additives

Flavors, Spices

Flavor enhancers

Fat replacers

Nutrients

Emulsifiers

Stabilizers, Thickeners, Binders, Texturizers

Groups of Food Ingredients-2



Leavening agents

Anti-caking agents

Humectants

Yeast nutrients

Dough strengtheners, Conditioners

Firming agents

Enzyme preparations

Gases




Halal Ingredients-1

- Only **ALLAH, the Supreme Law Giver** can ordain what is Halal and what is Haram
- **Halal food** means food fit for human consumption and permitted by laws of Islam or permissible and lawful
- The food or its ingredients do not contain any parts or products of animals that are non-Halal or products of animals which are not slaughtered according to Laws of Islam

Halal Ingredients-2



- **Halal ingredients** must not be Najis
 - **Halal ingredients** must safe and not harmful
 - **Halal ingredients** are neither prepared, processed or manufactured using Najis equipments nor remained in contact with Najis items
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Sources of Halal Ingredients



◎ Vegetable ingredients

All Halal except intoxicating

◎ Animal derived ingredients

Animals must be of the Halal species

Halal animals slaughtered by sane Muslim

Ensure complete removal of blood from carcass

Humane handling to be practiced

◎ Synthetic ingredients: All Halal



Haram Ingredients

- **Haram Foods** means foods or drinks strictly prohibited by Quran and Sunnah
- Haram foods include those containing:
 - Pork
 - Alcohol
 - Blood
 - Dead animals
 - Animals slaughtered without reciting the name of ALLAH

Questionable/Mashbooh Ingredients

Mashbooh is an Arabic term means suspected or doubtful ingredient about which we are not sure of the source

- ◎ **Gelatin:** Pork, Beef, Fish
- ◎ **Glycerin/glycerol:** Saponification of animal fats
- ◎ **Emulsifiers:** Animals
- ◎ **Enzymes:** Animal, Microbial, Biotechnological
- ◎ **Dairy Ingredients:** whey, cheese
- ◎ **Alcoholic Drinks**
- ◎ **Animal Protein/Fat**
- ◎ **Flavorings and Compound Mixtures**

Other Examples

- **Taurine:** Often used in energy drinks, mostly derived from pig gall
- **Pepsin, clarifiers and stabilizers:** to make drinks look clear
- **Cloudfifiers:** to make juice look cloudy
- **Active carbon and flavors:** for fruity aromas

GMO's Biotechnology

- ⊙ Chemicals acceptable
- ⊙ Enzymes acceptable
- ⊙ Transgenic Foods
 - ⊙ Plant to plant gene transfer is ok
 - ⊙ Animal to plant gene transfer?
 - ⊙ Animal to animal gene transfer?
- ⊙ New Species?

E-Codes



- E-codes are codes sometimes found on food labels in the European Union (Great Britain, France, Germany, Spain, Italy, Portugal etc.)
 - The codes indicates an ingredient which is some type of food additives
 - The “E” indicates that is a “European Union Approved” food additive
 - Other countries have different food labeling laws
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