Y9 Food Technology

North Oxfordshire Academy
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Lesson 1. Cooking methods and chemical reactions

Cooking Methods:

- Moist -> uses water or oil to cook. Examples: boiling, deep fat frying, poaching, steaming
- Dry -> cooks food with no liquid. Examples: baking, roasting, grilling, toasting

Implications:

Nutritional value. Vitamins, calories...

Sensory attributes – Texture, flavour, odour, appearance

Types of food browning:

ENZYMIC BROWNING (not desired)

The rapid browning of fruit (particularly when cut) is to do with enzymes that are contained within. Enzymes are exposed to oxygen and so a browning reaction is triggered. There are several methods that can be used to prevent or reduce unwanted enzymic browning, including:

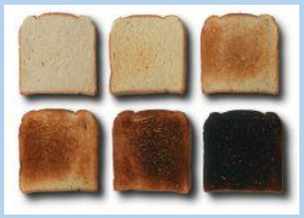
-Blanching (hot water for few time)
-Refrigeration or freezing
-Acidulation (lemon juice)

NON-ENZYMIC BROWNING (desired)

Non-enzymic browning refers to several different processes and reactions that can make foods 'brown' where oxygen is not involved. These processes are:

- Caramelization: SUGAR + DRY/MOIST HEAT

- Dextrinization: STARCH + DRY HEAT



- Maillard reaction PROTEINS + NATURAL SUGARS + DRY HEAT

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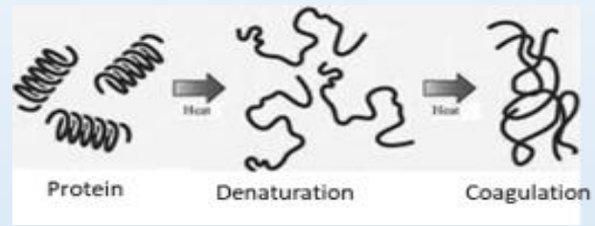
Lesson 3. Properties of carbohydrates and proteins.

Proteins:

Denaturation->the process of altering a protein's molecular characteristics or properties. Factors that contribute to denaturation are mechanical action, heat, salt and PH .

Coagulation-> follows denaturation. For example, when egg white is cooked it changes colour and becomes firmer (sets). The heat causes egg proteins to unfold from their coiled state and form a solid, stable network. Coagulation is irreversible



Carbohydrates:

Gelatinization-> Starch particles have absorbed a liquid as a consequence of heat resulting in a thickened sauce. Example: bechamel sauce, cheese sauce.

Roux-> fat and starch cooked together acting as the thickening agent of a starch-based sauce.

Lesson 5. Properties of fats

Types of fats:

Saturated -> solid at room temperature, animal source. Example: butter

Unsaturated -> liquid at room temperature, plant source. Example: oil

Fats perform different functions when used in recipes:

a) Shortening (rubbing in method): scones
b) Plasticity (ability to melt): chocolate
e) Aeration (creaming): buttercream
f) Flakiness (puff pastry): croissant
g) Retention of moisture (basting): roast
h) Glazing: salad dressing
i) Sensory attributes: flavour, texture, colour

Lesson 7. Seasonality, provenance and food miles

Seasonality: Foods that grow in particular seasons. Best flavour, cost, nutrients, availability

Food provenance: Know where food comes from (traceability)

Food miles: The distance a food travels from producer to final consumer

Sustainability: Guaranteed resources for days to come.

Carbon footprint: quantity of CO2 emissions