

Cooking Food

Key words:

Conduction: transferring heat through a solid object into food

Convection: transferring heat through a liquid or air into food

Radiation: transferring heat by infra-red waves which heat up what they come into contact with food

Conduction:

Atoms in metal pans and baking trays start vibrating as heat energy from cooker goes into metal. Vibrations transfer heat energy to other metal atoms.

Metal gradually heats up and passes heat energy to food. Metals are good conductors of heat .

Convection

When a pan of water is heated, heat is conducted through the metal pan to water molecules. These move upwards then downwards in circular motion (convection currents) taking heat energy with them and passing it into the food. The more heat energy, the faster the water molecules move in circular convection currents. Also happens in oven with hot air currents. Gas oven/ordinary electric oven have zones of heat: hotter at top than bottom shelf due to convection. Electric fan ovens – heat evenly distributed by fan – same temperature on each shelf.

Radiation

Grilled/barbecued food heated by radiant heat. Infrared heat rays heat the surface of the food and are absorbed. Food must be no more than 3.5cm

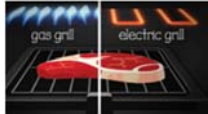
Why is food cooked?

- **To make food safe to eat** – Some foods must be thoroughly cooked to destroy the food poisoning bacteria they could contain. – Some foods contain natural toxins (poisons) which would be harmful if the food was eaten raw e.g. raw red kidney beans. Cooking destroys the toxins and makes the food safe to eat.
- **To develop flavours in the food** – Cooking develops flavour by causing chemical reactions to take place in the food e.g. gelatinisation. – Cooking concentrates and intensifies flavour by causing water to evaporate To improve the texture and appearance of food, and make it easier to eat, swallow and digest. Cooking causes starch granules to swell, gelatinise and thicken or soften a food . Cooking softens the structure of the cells in vegetables to make them less bulky and easier to eat – Cooking tenderises meat. This means the cooking process softens the meat so that it is easy to chew and digest.
- **To improve the shelf life** of food – Cooking destroys harmful micro-organisms such as bacteria and moulds, which preserves the food (makes the food last longer)
- **To give people a variety of foods in their diet** – Foods can be cooked in different ways to give variety, for example, potatoes

Heat Insulators

These are used to protect us from burning ourselves when cooking. E.g.

- Pan handles are plastic or wood making them comfortable to hold
- Hollowed metal pan handles allow the air to protect them from becoming too hot
- Wooden and silicone utensils protect us.
- Use insulated pan stands made from wood, cork, ceramics or metal to protect work surfaces
- Wearing oven gloves because these are made of thick, insulating material so the hands are protected from the heat

Dry heat	Moist (in liquid)	In oil
Baking in oven	Boiling: Cooking food in water at 100°C	Roasting: In oven in hot fat
Grilling/toasting	Simmering: Cooking food in small quantities of liquid at just under boiling point.	Sautéing: Pan frying in hot fat
Dry frying in no added oil	Stewing: slow-cooking on hob or in slow-cooker with liquid	Stir frying in little fat over high heat
	Poaching: Cooking in water	Deep fat frying
	Steaming: Cooking food	Shallow frying: Frying in a small amount of oil
	Braising: Slow-cooking pre-sealed meat + veg. in oven with liquid	
Other		
Induction cooking		Micro waving

Retaining water soluble vitamins: B and C

- Do not prepare veg too far in advance; vitamin C will be exposed to oxygen and lost when it is cut or peeled.
- Put veg. into a small amount of boiling water so they cook quickly; vitamin C and B vitamins will be lost in the water.
- Cook all veg. for the minimum amount of time to minimise the damage by heat to vitamin C and B vitamins.
- Steaming veg will reduce the loss of vitamin C and B vitamins to cooking water.
- Serve the vegetable cooking water in the gravy to conserve some of the vitamins that have gone into it.
- Do not prepare fruit too far in advance, to preserve the vitamin C. Add lemon juice to prevent enzymic browning and add acid to help stabilise vitamin C (ascorbic acid).
- Keep the fruit cold and in a box to minimise its exposure to oxygen and conserve the vitamin C

