

# HIGHER HFT PASS NOTES

**PROTEIN:** growth, repair and maintenance of body cells and tissues and secondary source energy. Meat, cheese, fish, milk, eggs, cream cheese, soya beans, chickpeas, cereals, wheat, rice, oats, pulses, peas, beans, lentils, nuts, quorn.

<i><b>TOO MUCH</b></i>	<i><b>TOO LITTLE</b></i>
<b>Short term</b> : provides energy to enable you to be active but if this is not used up then it is converted and stored as fat which will lead to weight gain	<b>Short term</b> : slow healing, tiredness
<b>Long term:</b> obesity (which may cause joint pain) and CHD	<b>Long term:</b> poor/stunted growth

**FATS:** concentrated source of energy, provide essential fatty acids, forms an insulating layer underneath the skin for warmth. Butter, oil, crisps, biscuits, take-away, ready meals

<i><b>TOO MUCH</b></i>	<i><b>TOO LITTLE</b></i>
<b>Short term</b> : provides energy to enable you to be active but if this is not used up then it is stored as fat which will lead to weight gain	<b>Short term</b> : tiredness, lethargy, unable to take part in activities
<b>Long term:</b> obesity and CHD	<b>Long term:</b> lose weight, feel cold

**CARBOHYDRATES:** To supply energy for all activities and body functions. Bread, rice, pasta, noodles, potatoes, fizzy juice, jam, honey, biscuits, cakes,

<i><b>TOO MUCH</b></i>	<i><b>TOO LITTLE</b></i>
<b>Short term</b> : provides energy to enable you to be active but if this is not used up then it is converted and stored as fat which will lead to weight gain	<b>Short term</b> : tiredness, lethargy, unable to take part in activities
<b>Long term:</b> obesity and CHD	<b>Long term:</b> lose weight

**VITAMINS:** WATER SOLUBLE VITAMINS = B and C (Before Christ – Christ walked on water) FAT SOLUBLE VITAMINS = A, D, E, K (all the rest!)

**ANTIOXIDANT VITAMINS (A,C,E VITAMINS):** fruits & veg, nuts, meat, poultry, and fish.

Antioxidant vitamins ward off free radicals which can cause serious damage to cells and contribute to heart disease and cancers
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**Vitamin A:** Required to make visual purple which assists with good vision – particularly in dim light. Milk, cheese, butter, eggs, oily fish, green leafy vegetables, orange and red fruits and vegetables

<i><b>TOO MUCH</b></i>	<i><b>TOO LITTLE</b></i>
<b>Short term</b> : can be dangerous in pregnancy and lead to birth defects (Spina Bifida) Good vision in dim light	<b>Short term</b> : poor vision in dim light (Nightblindness)
<b>Long term:</b> decreased risk of CHD and cancer as is an ACE Vitamin	<b>Long term:</b> increased risk of CHD and cancer as is an ACE vitamin

**VITAMIN B COMPLEX:** release of energy from food. **White flour, brown rice, wholemeal pasta, bacon, liver, milk, eggs**

<i><b>TOO MUCH</b></i>	<i><b>TOO LITTLE</b></i>
<b>Short term :</b> lots of energy	<b>Short term :</b> tiredness, lethargy, unable to take part in activities
<b>Long term:</b> good functioning of the nervous system	<b>Long term:</b> extreme lethargy

**Folic acid:** Essential for the formation of blood cells, helps protect against neural tube defects such as spina bifida in unborn babies so women are advised to eat folate-rich foods before planning a pregnancy and for the first 12 weeks of pregnancy. **Green leafy vegetables, wholegrain cereals, fortified breakfast cereals, oranges, dairy foods**

<i><b>TOO MUCH</b></i>	<i><b>TOO LITTLE</b></i>
<b>Short term :</b> lots of energy but if not used up then will lead to obesity	<b>Short term :</b> tiredness, lethargy, unable to take part in activities
<b>Long term:</b> prevention of neural tube defect (spina bifida) in unborn babies	<b>Long term:</b> spina bifida in unborn babies

**Vitamin C:** helps the absorption of iron and so helps prevent anaemia. **Blackcurrants, green leafy vegetables, basil, kale, citrus fruits, peas, tomatoes**

<i><b>TOO MUCH</b></i>	<i><b>TOO LITTLE</b></i>
<b>Short term :</b> quick healing of cuts and wounds, prevents infections	<b>Short term :</b> slow healing of cuts and wounds, risk of infections
<b>Long term:</b> decreased risk of CHD and cancer as is an ACE Vitamin	<b>Long term:</b> increased risk of CHD and cancer as is an ACE vitamin

**Vitamin D :** Acts with calcium and phosphorous to make calcium phosphate which helps form strong bones and teeth, promotes quicker healing of bone . **Egg yolk, breakfast cereals, margarine**

<i><b>TOO MUCH</b></i>	<i><b>TOO LITTLE</b></i>
<b>Short term :</b> strong bones and teeth	<b>Short term :</b> more likely to break a bone, tooth decay, weak bones
<b>Long term:</b> prevents against developing osteoporosis	<b>Long term:</b> osteoporosis

**Vitamin E:** antioxidant vitamin to prevent certain cancers and CHD. **Vegetable oils, egg yolk, nuts, margarine, meat**

<i><b>TOO MUCH</b></i>	<i><b>TOO LITTLE</b></i>
<b>Short term :</b> good maintenance of cells membranes	<b>Short term :</b> poor maintenance of cells membranes
<b>Long term:</b> decreased risk of CHD and cancer as is an ACE Vitamin	<b>Long term:</b> increased risk of CHD and cancer as is an ACE vitamin

**Calcium:** Combines with phosphorus to make calcium phosphate to give hardness and strength to bones and teeth. **Milk, cheese, yoghurt, green leafy vegetables, tinned fish with bones, nuts**

<i><b>TOO MUCH</b></i>	<i><b>TOO LITTLE</b></i>
<b>Short term:</b> strong bones and teeth	<b>Short term :</b> weak bones and tooth decay
<b>Long term:</b> reduced risk of developing osteoporosis in later life	<b>Long term:</b> osteoporosis

**Phosphorus:** Works with calcium in the formation of calcium phosphate. **Fish, nuts, milk, cheese, eggs, meat**

<i><b>TOO MUCH</b></i>	<i><b>TOO LITTLE</b></i>
<b>Short term:</b> strong bones and teeth	<b>Short term :</b> weak bones and tooth decay
<b>Long term:</b> osteoporosis in later life	<b>Long term:</b> osteoporosis

**Iron :** required to transfer oxygen around the body to every cell so that we don't feel tired and become anaemic. **Red meat, green leafy vegetables, basil, kale, plain chocolate**

<i><b>TOO MUCH</b></i>	<i><b>TOO LITTLE</b></i>
<b>Short term :</b> prevents anaemia	<b>Short term :</b> tiredness, pale skin,
<b>Long term:</b> reduced risk of anaemia	<b>Long term:</b> anaemia

**Sodium:** maintains the correct fluid balance of the body. **Bacon, cheese, crisps, tinned foods, ready meals, takeaway meals**

<i><b>TOO MUCH</b></i>	<i><b>TOO LITTLE</b></i>
<b>Short term :</b> hypertension	<b>Short term :</b> muscle cramps
<b>Long term:</b> strokes	<b>Long term:</b> muscle cramps

**WATER:** required for all body fluids, e.g. digestive juices, mucus, saliva, blood, sweat and urine, assists in the excretion of waste faeces by combining with fibre and so prevents constipation. **Fruit and vegetables, meat, tap water, milk**

<i><b>TOO MUCH</b></i>	<i><b>TOO LITTLE</b></i>
<b>Short term :</b> reduced risk of constipation	<b>Short term :</b> dehydration
<b>Long term:</b> imbalance of body fluids	<b>Long term:</b> increased risk of constipation

**FIBRE :** Helps to remove toxic waste so can reduce CHD and cancer, help remove waste so can reduce constipation and bowel disease/cancer. Gives a feeling of fullness so prevents obesity which can lead to increased risk of CHD, stroke and cancer. **Wholemeal flour, brown rice, fruit and veg.**

<i><b>TOO MUCH</b></i>	<i><b>TOO LITTLE</b></i>
<b>Short term :</b> feeling of fullness, reduced risk of constipation	<b>Short term :</b> constipation
<b>Long term:</b> bloatedness, diarrhoea	<b>Long term:</b> diverticular disease, bowel cancer

**ENERGY: NOT A NUTRIENT! Name the nutrient e.g. carbohydrate fat, protein.**

<i>TOO MUCH</i>	<i>TOO LITTLE</i>
<b>Short term</b> : lots of energy but if not used up then will lead to weightgain	<b>Short term</b> : tiredness, lethargy, unable to take part in activities
<b>Long term</b> : obesity and CHD	<b>Long term</b> : lose weight

**Inter-Relationship of Nutrients:**

**Calcium, Phosphorus and Vitamin D:**

- Calcium and phosphorus make calcium phosphate which gives bones and teeth their hardness.
- Absorption of calcium is controlled by vitamin D. Without vitamin D we cannot make use of the calcium in food.

**Iron, Vitamin C and Folic Acid:**

- Vitamin C is required to change iron into its more easily absorbed form – ferrous iron – and thus ensures an adequate supply of red blood cells.
- Folic acid also improves the red count – if iron is lacking then folic acid can supplement the supply.

**Dietary Goals**

GOAL	DETAIL	EFFECT ON HEALTH
Calories	Average diet to be lowered by 120 kcal a day.	Calories if not used up are converted by the body and stored under the skin as a layer of fat. This increases body weight leading to weight gain and obesity.
Fruit & Veg	Increase to at least 5 portions per person per day	Fruit and vegetables are high in antioxidant vitamins. These ward off free radicals so reduce the risk of developing certain types of cancers. Fruit and vegetables are high in fibre so promote a feeling of fullness. They are low in sugar/salt/calories.
Oily Fish	Oil rich fish consumption to increase to 140g per week	Low in sugar/salt/calories so can prevent dental caries, hypertension, obesity, constipation. Source of EFA e.g. omega 3 and omega 6 which reduces risk of CHD and cancer
Red Meat	Reduce to 70g per day	Red meat contains a lot of fat which is a concentrated source of energy. If this is not used during activities it will be stored as fat in the body putting you at increased risk of obesity
Fats	Intake in saturated fat to reduce to no more than 11% food energy	Fat is a concentrated source of energy. If this is not used during activities it will be stored as fat in the body. High levels of fat in the liver, heart and other organs can increase the risk of developing cancers as well as putting you at increased risk of obesity and CHD.
Free Sugar	Intake of free sugar to reduce to less than 5% of food energy	Free sugars are added to foods by the manufacturer, cook or consumer, which are a rich source of energy which if not used is stored as fat and can increase the risk of obesity, tooth decay and Type 2 Diabetes.
Salt	Intake of salt to reduce to 6g per day	Too much salt can cause plaque to build up on the artery walls increasing high blood pressure. This can increase the risk of blood clots or blockages in the arteries which can lead to a stroke.
Fibre	Increase to 30g per day	Gives feeling of fullness so prevents obesity, flushes out toxins so reduces bowel disease, low in sugar/salt/calories so can prevent dental caries, hypertension, obesity
Complex Carbs	Increase to 50% of food energy	High in fibre if wholemeal varieties are eaten so prevents bowel disease. Give feeling of fullness so can reduce snacking on fatty sugary foods so will reduce the risk of obesity and CHD.

ACTION	How are manufacturers contributing to meeting this goal?
<b>Reduce fat</b>	In response to consumer demands for 'slimming' products, manufacturers have developed products (fat replacers) which act as substitutes for the fat content to reduce the energy value of ready meals. Manufacturers can reduce the saturated fat content of ready meals to suit consumers wishing to lower blood cholesterol levels or to reduce concerns about coronary heart disease.
<b>Reduce salt</b>	Manufacturers are reducing salt, by the use of spices and herbs in ready meals, in response to consumer concerns about the link between hypertension (HBP) and salt intake.
<b>More oily fish</b>	Manufacturers are offering variety to consumers by adding oily fish to ready meals e.g. salmon curry which is <b>more convenient</b> . Making ready meals for kids e.g. salmon fingers to <b>save consumers time</b> .
<b>Increase in total complex carbohydrates</b>	Manufacturers are incorporating more wholegrain ingredients into ready meals to satisfy consumer demand for products high in FIBRE to help reduce the risk of bowel diseases Manufacturers are incorporating more fruit and vegetables into ready meals to satisfy consumer demand to increase fruit and vegetables intake. <b>Save time</b> preparing from fresh
<b>Reduce free sugar</b>	Sugar substitutes or artificial sweeteners are being used by manufacturers in ready meals in response to consumer demand for low-sugar/energy products, particularly for those consumers on weight reduction diet or concerned about dental decay.
<b>Increase Fruit &amp; Vegetable intake</b>	Manufacturers are incorporating more fruit and vegetables into ready meals to satisfy consumer demand to increase fruit and vegetables intake. Manufacturers are creating pre-prepared fruit and vegetable products that are <b>more convenient for consumers to use, saving time</b>

FOOD TYPE	POSITIVES	NEGATIVES
<b>Bread/pasta/ rice</b> <b>Breakfast cereal</b>	Wholemeal and brown varieties are a good addition to the diet as they contain FIBRE which promote good digestion and help to prevent constipation and bowel disease. Good addition to the diet as it provides carbohydrates which provide energy for all body activity/active people/people involved in sport	May be bad in the diet as it may be served with butter or a high fat sauce/filling therefore may contribute to obesity/Coronary Heart Disease (CHD) May be bad if the cereal is sugar coated as could lead to increased risk of tooth decay/type 2 diabetes
<b>Alternative Proteins</b>	Alternative proteins is a good addition to the diet as it is low in sugar therefore should not cause excess weight gain/obesity/high blood pressure/Coronary Heart Disease (CHD)/ tooth decay/diabetes Alternative proteins are a good addition to the diet as it is low fat therefore should not cause weight gain/obesity/high blood pressure/CHD	Alternative proteins may be bad in the diet as it may be served with a sauce that is high in fat therefore may contribute to obesity/Coronary Heart Disease (CHD)
<b>Fish/ Oily Fish</b>	Oily fish is a rich source of omega 3/fatty acids which is good as these have been shown to reduce the risk of heart disease. Oily fish is a rich source of omega 3/fatty acids which is good as these have been shown to prevent some cancers. Oily fish is a rich source of protein which is good and will therefore contribute to the growth/repair/maintenance of body tissues	Fish/oily fish may be bad in the diet as it may be served with a sauce that is high in fat therefore may contribute to obesity/Coronary Heart Disease (CHD)
<b>Fruit and Vegetables</b>	Fruit and veg are a good addition to the diet as they are low in fat therefore should not cause excess weight gain/obesity/high blood pressure/CHD. Fruit and vegetables are a good addition to the diet as they contain FIBRE which promote good digestion and help to prevent constipation/bowel disease	Vegetables may be bad in the diet as they may be cooked with salt therefore increasing the risk of high blood pressure/CHD). Fruit and vegetables may be bad in the diet as it may be served with a sauce that is high in fat therefore may contribute to obesity/CHD

<b>Red Meat</b>	<p>Red meat is a good addition to the diet because it provides protein for the body therefore allowing growth and repair and maintenance of body cells/secondary source of energy.</p> <p>Red meat is a good addition to the diet because it contains fat which provides a concentrated source of energy for all activities/sports</p>	<p>Red meat may be bad in the diet as it may be cooked with salt or eaten with a salty sauce therefore increasing the risk of high blood pressure/Coronary Heart Disease (CHD).</p> <p>Red meat may be bad in the diet as it may be served with a sauce that is high in fat therefore may contribute to obesity/Coronary Heart Disease (CHD)</p>
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<b>NUTRIENT</b>	<b>STORAGE</b>	<b>PREPARATION</b>	<b>COOKING</b>
<b>Vitamin C</b>	Do not store for a long time as vitamin C is oxidised by exposure to air. Exposure to air leads to changes to the chemical structure of vitamin C so that it cannot be used by the body. Buy as fresh as possible, as long storage causes deterioration. Store in fridge as this slows down oxidation of vitamin C.	Avoid soaking as vitamin C is water soluble and will leak into the water and be lost but you could use the cooking water for sauces or gravy to retain nutrients. Use sharp knives as blunt knives cause more cells to be damaged and more Vit C to be lost.	Destroyed by fairly low temperatures and so should be added to boiling water and cooked for a minimum time.  Putting into boiling water denatures the enzyme oxidase which destroys vitamin C. Vitamin C is water soluble so it will be lost in cooking water
<b>Obesity:</b> This is caused when an individual becomes so overweight that the extra weight is a danger to their health, putting at increased risk of CHD, stroke and cancer		<p><i>Dietary Causes</i></p> <p>Diet high in fat/ sugar as put on weight and lead to obesity which is a contributory factor in CHD</p> <p>Diet low in fruit and veg as gives feeling of fullness so prevents snacking leading to obesity and thus CHD</p>	<p><b>Non-dietary Causes</b></p> <p>Working shifts</p> <p>Lack of exercise</p> <p>Lack of cookery knowledge</p>
<b>CHD:</b> the arteries become narrowed with a gradual build-up of fatty material, called cholesterol.		<p><i>Dietary Causes</i></p> <p>Diet high in fat/ sugar as put on weight and lead to obesity which is a contributory factor in CHD</p> <p>Diet low in fruit and veg as gives feeling of fullness so prevents snacking leading to obesity and thus CHD</p>	<p><b>Non-dietary Causes</b></p> <p>Smoking</p> <p>Lack of exercise</p> <p>Lack of cookery knowledge</p>
<b>Type 2 Diabetes:</b> when there is not enough insulin produced or the insulin that is made by the body doesn't work properly.		<p><i>Dietary Causes</i></p> <p>High sugar diet</p> <p>Low intake of fibre/fruit and veg</p> <p>Diet high in fat as put on weight and lead to obesity which is a contributory factor in Type 2 diabetes</p>	<p><b>Non-dietary Causes</b></p> <p>Lack of exercise</p> <p>Lack of cookery knowledge</p> <p>Not looking at labels on food</p>
<b>Osteoporosis :</b> porous bones' and is also known as brittle bone disease, this is where our bones lose some calcium.		<p><i>Dietary Causes</i></p> <p>Diet low in calcium, phosphorous and Vit D – all 3 needed to give strength to bones</p>	<p><b>Non-dietary Causes</b></p> <p>Lack of exercise</p> <p>Smoking</p>
<b>Anaemia:</b> A shortage of iron is one cause of anaemia – iron deficiency. Iron forms haemoglobin (red blood cells), which causes the red colour in blood and carries oxygen to all parts of the body to be used for energy.		<p><i>Dietary Causes</i></p> <p>Diet low in iron and vitamin C – both needed to change ferric to ferrous iron which can then be absorbed and prevent anaemia</p>	<p><b>Non-dietary Causes</b></p>

<p><b>Bowel Disease:</b> A diet which contains high amounts of processed convenience foods which are lacking in fibre has led to an increase in the number of bowel disorders</p>	<p><i>Dietary Causes</i></p> <p>Diet low in fibre as this helps flush out toxins and waste</p> <p>Diet low in fruit and veg as gives feeling of fullness so prevents snacking</p> <p>Diet high in fat, sugar as put on weight and lead to obesity which is a contributory factor in bowel disease</p>	<p><b>Non-dietary Causes</b></p> <p>Lack of exercise</p>
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## CONSUMER PROTECTION

<p><b>Food Standards Agency</b></p>	<p>The Food Standards Agency is an independent food safety watchdog set up by an Act of Parliament to protect the public's health and consumer interests in relation to food. The Agency consults with consumers to understand their views and concerns about food related issues. Gives advice about nutrient content of foods and dietary issues</p>
<p><b>Environmental Health Department</b></p>	<p>The Environmental Health Department is responsible for protecting members of the public from diseases and other health dangers in relation to food. EHO's provide advice on food safety and carry out inspections on all food premises. They can issue an improvement notice or close down premises if consumers are at risk of becoming ill from eating contaminated food.</p>
<p><b>Trading Standards Department</b></p>	<p>The Trading Standards Department looks after the interests of consumers and traders by enforcing fair trading laws and investigating consumer complaints. Ensure food labelling is accurate with regard to the composition of the product (its ingredients are correctly listed) and traders do not falsely describe any products or services they are selling verbally or in writing</p>
<p><b>Food Hygiene Regulations</b></p>	<p>Act that checks food premises are storing cold food between 1-4C, storing hot food above 63C and reheating food to above 82C. Will enforce safety legislation and can ask EHD to inspect food premises as appropriate.</p>

**MARKETING/PROMOTIONAL TECHNIQUES:** When a new product is launched the RETAILER may use promotional techniques to help increase sales.

<p><b>SPECIAL OFFERS (BOGOF) / INTRODUCTORY LOW PRICES</b></p>	<p>These are good as people may be more likely to buy a new product if they are getting more for their money increasing profit AND if the product is initially introduced at a low price and if they like it they may continue to buy it once the special offer ends increasing profit BUT can be expensive for the retailer</p>
<p><b>FREE TOYS</b></p>	<p>Collectable toys will be good as will encourage families with children to buy product increasing profit however, money may be wasted by parent if child only wants the toy but refuses to eat the food leading to reduces sales</p>
<p><b>VOUCHERS/COUPONS</b></p>	<p>These are good because they allow people to get the new product using the voucher along with their shopping increasing profit and if they like it they can buy it without worrying about spending money on something they may not like helping to increase profit BUT can be expensive for the retailer</p>
<p><b>CELEBRITY ENDORSEMENT / TV ADVERTS</b></p>	<p>These are good because people may be encouraged to buy a product if advertised by a person they admire increasing profit. However, they may not be good as you may be persuaded to spend more money than you have and foods promoted are not always healthy. Need to be on TV when target group are watching. BUT can be very expensive for the retailer.</p>
<p><b>FREE SAMPLES/TASTE SESSION</b></p>	<p>These are good because they allow people to taste the new product and if they like it they can buy it without worrying about spending money on something they may not like increasing profit, however must be in a shop that the target market usually use ad can be expensive for the retailer</p>

<b>Stage</b>	<b>Explanation</b>
<b>Concept Generation</b>	Involves developing new ideas for the <b>NEW PRODUCT</b> so that the manufacturer doesn't replicate existing products in the market
<b>Concept Screening</b>	Consider all ideas for the <b>NEW PRODUCT</b> , keep some and discard others that might be costly so that they rule out ideas that won't work and start to narrow down the ideas
<b>Prototype Production</b>	Making up samples of the <b>NEW PRODUCT</b> so that they can identify any strengths and what improvements or modifications are needed
<b>Product Testing</b>	Testing the <b>NEW PRODUCT</b> with a range of consumers so that opinions can be obtained to help identify improvements that are needed
<b>First Production Run</b>	The <b>NEW PRODUCT</b> is produced for the first time in the factory as a full production run so that the item can be assessed for quality
<b>Marketing Plan</b>	An advertising campaign is designed to promote the <b>NEW PRODUCT</b> once it goes on sale so that it will attract consumer interest
<b>Product launch</b>	The <b>NEW PRODUCT</b> is now on sale in the chosen outlets. Sales are monitored so that changes to price or advertising can be made if sales targets are not met

### **FUNCTIONAL PROPERTIES**

#### **Eggs:**

<b>Aeration</b>	When eggs are beaten they form a foam which traps air, which makes baked products lighter.
<b>Coagulation</b>	When eggs are heated the protein coagulates which changes from a fluid to a solid. This can thicken or set baked products, if over- heated the protein shrinks resulting in a tougher watery product (scramble eggs)
<b>Binding</b>	The egg protein coagulates when heated which helps to bind or hold ingredients together.
<b>Flavour</b>	Eggs add a rich flavour to baked product

#### **Flour:**

<b>Gelatinisation</b>	When starch and water are heated, the water is absorbed by the starch granules, which swell and burst causing the liquid to thicken
<b>Fermentation</b>	Yeast produces carbon dioxide and alcohol which allows the flavour texture and volume to develop. When dough is cooked the gluten is stretched by the bubbles of co2 gas and the bread rises
<b>Dextrinisation</b>	The surface starch in baked items changes to dextrin during cooking, which helps baked goods become golden brown in colour

**Sugar:**

<b>Crystallisation</b>	When sugar is dissolved in water and then boiled the water is driven off resulting in a thick syrup being formed. This set to crystals when cooled. The mixture should not be stirred as this will result in a crunchy mixture.
<b>Caramelisation</b>	When sugar is heated in a liquid or used as a topping it begins to caramelize and turn brown due to the heat. It will burn if heated for too long.
<b>Flavour</b>	Sugar adds a sweet flavour to baked products

**Fat:**

<b>Aeration: Creaming Rubbing In</b>	When beaten together, fat and sugar form a foam which traps air and makes the baked product lighter When fat is rubbed into flour it coats the flour particles which forms a waterproof barrier and traps air
<b>Shortening</b>	When fat is rubbed into flour it coats the flour particles, but some remain uncoated. When water is added the uncoated particles absorb the water which is why fats make baked products crumbly (or short)
<b>Colour</b>	Butter can give a golden brown colour to baked products
<b>Flavour</b>	Butter adds a rich flavour to baked product

**Liquid (water, milk):**

<b>Aeration</b>	Liquids help baked products to rise as they produce steam when heated in the oven. Yeast (used in bread) needs liquid in order to grow.
<b>Colour</b>	Milk can give a golden brown colour to baked products
<b>Flavour</b>	Milk adds a rich flavour to baked product

**Yeast:**

<b>Fermentation</b>	When the yeast ferments it produces CO <sub>2</sub> which will raise the dough during proving giving a lighter more open texture
<b>Flavour</b>	Yeast produces chemicals during fermentation giving flavour to baked products

**Conditions for the growth of bacteria:**

<b>CONDITION</b>	<b>EFFECT ON BACTERIAL GROWTH</b>
<b>Warmth</b>	The best temperature for the growth of bacteria is 37 °C, which is body temperature. <ul style="list-style-type: none"> <li>• The temperature range of 5 °C–63 °C is often referred to as ‘the danger zone’. Foods should be kept below or above these temperatures whenever possible.</li> <li>• Ensure that food is thoroughly cooked to core temperatures of 75 °C or above.</li> <li>• Reheat food to 82 °C. Small numbers of bacteria may have survived the original cooking and continue to multiply. By increasing the temperature, these bacteria will be destroyed.</li> <li>• Most bacteria will multiply very slowly in a refrigerator (1 °C–4 °C).</li> <li>• No bacteria will multiply in frozen food (–18 °C) Once defrosted bacteria will grow again.</li> </ul>

<b>Food</b>	Some foods are high-risk foods (e.g. shellfish, cooked meats, stock, gravies, soup, milk and cream) because bacteria grow easily on them Other food which do not normally support the growth of bacteria are known as low-risk foods (e.g. salt, sugar, vinegar, lemon juice)
<b>Moisture</b>	Like all living cells, bacteria need moisture to grow. <ul style="list-style-type: none"> <li>• Bacteria prefer a high water content; many foods contain sufficient moisture for growth</li> </ul>
<b>Time</b>	A few bacteria, given sufficient time, can multiply quickly to produce enough to cause food poisoning.
<b>Oxygen</b>	<ul style="list-style-type: none"> <li>• Most bacteria require oxygen to grow. These are called aerobic bacteria.</li> <li>• Some bacteria do not require oxygen to grow. These are called anaerobic bacteria.</li> </ul>
<b>pH levels</b>	<ul style="list-style-type: none"> <li>• Most pathogenic bacteria cannot grow in an acid environment of pH 4.7 or less, for example in the pickling method of preservation.</li> </ul>

Preservation	Description
<b>Freezing</b>	<ul style="list-style-type: none"> <li>• Bacteria are dormant - so food spoilage is reduced, water changes to ice so less moisture for bacteria growth, Bacterial growth increases once food is defrosted</li> </ul>
<b>Chilling</b>	<ul style="list-style-type: none"> <li>• Food is refrigerated 1-4oc, bacteria multiply and food spoilage are slowed but not stopped</li> </ul>
<b>Jam Marmalade</b>	<ul style="list-style-type: none"> <li>• Fruit is boiled to <b>destroy</b> enzymes and bacteria – helping to prevent spoilage, high concentration of sugar <b>reduces</b> bacterial growth (pH level to acidic)</li> </ul>
<b>Pickling Chutney</b>	<ul style="list-style-type: none"> <li>• Fruit is boiled to <b>destroy</b> enzymes and bacteria – helping to prevent spoilage, high concentration of acid <b>reduces</b> bacterial growth (pH level to acidic)</li> </ul>
<b>Vacuum Packaging (MAP)</b>	<ul style="list-style-type: none"> <li>• Oxygen is removed which prevents bacteria multiplying unless they are anaerobic</li> <li>• This method is sometimes used along with chilling e.g. bacon – often vacuum packed food needs to be refrigerated</li> <li>• Modified atmosphere packing reduces the amount of oxygen inside the pack and increases the carbon dioxide. This means aerobic bacteria cannot grow. The rate of food spoilage slows down</li> </ul>

**Food Poisoning is increasing due to:**

Reason	Explanation
<b>Poor personal hygiene/lack of hygiene knowledge</b>	<ul style="list-style-type: none"> <li>• Regular training of all food handlers should take place to ensure they are fully up-to-date with all hygiene procedures</li> </ul> <p>If training is not completed or a food handler is unaware of hygiene procedures this may result in food poisoning e.g. storing hot food at the wrong temperature i.e. in the danger zone (4-63C)leading to bacterial growth</p>
<b>Eating outside the home</b>	<ul style="list-style-type: none"> <li>• Less food is prepared and cooked at home; this too results in more people handling food, which could result in an increased risk of food poisoning.</li> <li>• Infected food handlers or those with poor hygiene habits increase the hazard as bacteria have a much greater chance to multiply.</li> </ul>

<p><b>Shopping for food</b></p>	<ul style="list-style-type: none"> <li>• Food which is not kept cold and is purchased at outdoor markets could become contaminated with bacteria, which could lead to food poisoning.</li> <li>• Chilled or frozen food, which has been purchased but has not been stored or transported home in a cool box, can cause food poisoning. If the food has remained in a car boot for some length of time on a hot day then bacteria will multiply in the warmth.</li> </ul>
<p><b>Preparing food in the home</b></p>	<ul style="list-style-type: none"> <li>• Inadequate cooking or reheating increases the hazard as the centre of the food does not reach the core temperatures of 75 ° C or 82 ° C if reheated. The temperature is not high enough to destroy bacteria.</li> <li>• Barbecued food increases the hazards if it is burnt on the outside due to the high temperature, but high-risk food such as poultry and sausages do not reach the core temperature in the centre. Thus pathogenic bacteria are not killed.</li> <li>• Inadequate thawing of poultry increases the hazards as the centre of the food does not reach the core temperature; therefore, pathogenic bacteria are not killed.</li> <li>• Cross-contamination of raw food to cooked food so that the bacteria are present on the cooked food, leads to food poisoning.</li> <li>• Uncovered food contaminated by animals or flies.</li> </ul>

#### **STEPS TO PREVENT FOOD POISONING**

<b>Hygiene Area</b>	<b>Measure</b>
<b>Knowledge</b>	<p>All food handlers must be given food hygiene training on a regular basis to ensure their knowledge is kept-up-to-date</p> <ul style="list-style-type: none"> <li>• Food handlers should follow all food hygiene procedures at all times in order to minimise the risk of food poisoning</li> </ul>
<b>Hands and skin</b>	<p>Hands must be kept clean at all times as they are in direct contact with food, and so are the main route of transferring bacteria.</p> <ul style="list-style-type: none"> <li>• Food handlers should follow a thorough hand-washing procedure and dry hands on disposable paper towels</li> </ul>
<b>Nose, mouth and ears</b>	<ul style="list-style-type: none"> <li>• People with bad colds should not handle food as droplet infection from coughs and sneezes can land on food.</li> <li>• Paper tissues should be used only once and disposed of – hands should then be washed.</li> </ul>
<b>Cuts, boils, septic spots and skin infections</b>	<ul style="list-style-type: none"> <li>• All of these should be covered by blue waterproof dressings to prevent bacteria from being transferred to food.</li> </ul>
<b>Jewellery and perfume</b>	<ul style="list-style-type: none"> <li>• Jewellery should not be worn by food handlers as it may trap dirt and bacteria..</li> <li>• Strong-smelling perfume should not be worn by food handlers as the smell may be transferred to the food.</li> </ul>
<b>Hair</b>	<ul style="list-style-type: none"> <li>• Hair should be completely enclosed so that loose hair and dandruff do not contaminate the food.</li> </ul>
<b>Smoking</b>	<ul style="list-style-type: none"> <li>• Smoking is not allowed whilst handling food because: <ul style="list-style-type: none"> <li>– cigarette ends and ash may contaminate the food</li> <li>– handlers may touch their lips whilst smoking and then transfer harmful bacteria to food</li> <li>– smoking encourages coughing which produces droplets of infection</li> </ul> </li> </ul>

## Eight stages in food production ensure food safety

Stage	Importance of each stage
1. Purchase of ingredients	<ul style="list-style-type: none"> <li>• High-risk foods, such as fish, meat or cream can present a hazard to health as they could be contaminated by bacteria</li> <li>• Ingredients should be purchased from a reputable supplier to guarantee quality and safety</li> </ul>
2. Delivery of ingredients	<ul style="list-style-type: none"> <li>• Checks should be in place to ensure that high-risk foods are delivered at temperatures between 0 and 4 °C</li> <li>• Date marks of dry stores/fats should be checked to ensure that there is sufficient time remaining for them to be used safely</li> </ul>
3. Storage of ingredients	<ul style="list-style-type: none"> <li>• Checks should be in place to ensure that high-risk foods such as chicken or cream are stored at temperatures between 1 and 4 °C to prevent bacterial growth</li> <li>• Stock rotation system should be used to ensure that the FIFO (First In First Out) system applies. Use foods within the date mark</li> <li>• Raw and cooked ingredients should be kept separate to prevent cross-contamination</li> </ul>
4. Preparation of ingredients	<ul style="list-style-type: none"> <li>• Food handlers should follow strict food hygiene rules to avoid possible contamination of ingredients, by wearing protective clothing</li> <li>• Equipment and surfaces must be well cleaned and maintained to prevent possible contamination from equipment</li> <li>• Check no foreign bodies have entered the food during preparation as these could cause the consumer to choke, e.g. fish bones</li> </ul>
5. Cooking of ingredients	<ul style="list-style-type: none"> <li>• Cooking times and temperatures must be checked. Products must be thoroughly cooked to destroy bacteria</li> <li>• Routine temperature checks using food probes to check that core temperatures reach at least 75 °C at centre</li> </ul>
6. Chilled storage	<ul style="list-style-type: none"> <li>• Cooked food must be cooled or chilled rapidly so that the danger zone is quickly passed through to prevent the growth of harmful bacteria</li> <li>• High-risk foods such as cream must be refrigerated at between 1 and 4 °C immediately after preparation. There should be no contact with raw food, to prevent cross-contamination</li> </ul>
7. Packaging	<ul style="list-style-type: none"> <li>• Packaging should be sealed to protect food from contamination or physical contamination</li> <li>• Packaging may have to withstand chilling temperatures without breaking up when refrigerated</li> <li>• Packaging should be labelled to indicate how the product should be stored safely before eating</li> </ul>
8. Distribution	<ul style="list-style-type: none"> <li>• High-risk food or cook-chill foods should be distributed to retail outlets in a refrigerated vehicle at between 1 and 4 °C</li> <li>• Temperature of vehicle should be checked and recorded before food is loaded into it at the factory and removed from it before unloading to the retailers</li> </ul>

### Factors that affect food choice:

Budget/money	Those on a limited income may buy own brand food and food on special offer as this may save money. Eating out and fresh fruit/veg may be limited due to high costs
Lack of cooking skills	Those that have very few cooking skills may rely on ready meals and takeaways as they don't have the skills to prepare and cook foods from scratch, but these are often high in fat and salt so may cause obesity and strokes
Peer pressure	Often teenagers want to eat what their friends are eating so may choose fast foods and unhealthy foods in order to fit in and not be different. These may be unhealthy so don't meet CDA

<b>Why consumers may choose 'seasonal/local foods'</b>	<b>Why consumers may not choose 'seasonal/local foods'</b>
Food is often cheaper when bought in season e.g. strawberries in summer. Local when in season cutting down on air miles	Consumers may be unaware of when food like fruit and vegetables are in season
<b>Why consumers may choose 'organic food'</b>	<b>Why consumers may not choose 'organic food'</b>
Some people believe they taste better. They are <i>free</i> from chemical or pesticides residues and have fewer side effects or allergies	Organic food tends to be expensive. Fruit and vegetables may not keep for so long so could result in more being wasted.
<b>Why consumers may choose 'Fairtrade food'</b>	<b>Why consumers may not choose 'Fairtrade food'</b>
Some consumers believe the quality of foods can be better. To support farmers in developing/3 <sup>rd</sup> world countries in getting a fair wages and decent price for their products	Fairtrade products may be transported from far-off countries, some consumers are concerned about food miles. Some Fairtrade products tend to be expensive
<b>Why consumers may choose 'Animal Welfare/Free Range'</b>	<b>Why consumers may not choose 'Free Range'</b>
Some consumers believe the quality of foods can be better due to animals being happy during their lifetime. Ethically aware consumers will choose this as they believe it is morally right to raise animals to be free	Some free range products tend to be more expensive than caged so some consumers may not be able to afford them
<b>Why consumers may choose 'GM' food</b>	<b>Why consumers may not choose 'GM' food</b>
Can help preserve food so decrease food waste. Can be cheaper to buy as produce is mass produced	Consumers may be worried about long term effect on health. Consumers may be worried about the impact on the environment of GM crops

**Food Additives:** These can be natural or synthetic and are added to foods to perform a specific role.

<b>Additive/Technological Development</b>	<b>Explanation</b>
<b>Colourings</b>	Good as adds colour to make food product look attractive, replaces colour that can be lost during food production, but children may be allergic to this so may be avoided
<b>Flavourings</b>	Good as adds or replaces flavour in foods making them taste better, enhances the flavour of food
<b>Preservatives</b>	Good as helps keep food fresher for longer by preventing bacteria from multiplying so less waste
<b>Modified Atmospheric Packed (MAP) Product</b>	Product can be seen through the packaging before buying and shelf-life of food is improved as the oxygen content is reduced, but there's a lot of packaging and needs to be used as fresh once opened
<b>Cook Chill Food Products</b>	Many cook-chill meals can be frozen at home so save time on shopping, usually in individual portions so good for single person, easy to use, prepare, cook/reheat in a microwave and so can save time if a busy lifestyle, but can be expensive so not good if on tight budget
<b>UHT</b>	Lasts a long time so good for elderly or disabled people who don't go shopping often and doesn't have to be stored in fridge if space is limited. However can taste different (so may not appeal to everyone) and must be treated as fresh once opened
<b>Functional Foods</b>	Probiotics are good as can help a healthy digestive system and boost immune system so preventing stomach upsets, however can be expensive and there is a limited number of products that contain these
<b>Alternative proteins</b>	Provide a good source of protein for those not eating meat such as vegetarians, good source of fibre to prevent constipation and are filling but can lack flavour and texture and do not contain Vitamin B12 so can lead to a deficiency unless gained elsewhere

