Year: 10

Topic 1.3 DIGESTION AND THE DIGESTIVE SYSTEM IN HUMANS

Knowledge and Understanding to be developed	**Key Terms to be learned this topic:**
This topic covers the need for digestion, the structure of the digestive system in humans and the mechanisms by which larger molecules are broken down into smaller soluble molecules which can be absorbed into the blood. The use of Visking tubing as a model of absorption enables learners to develop scientific explanations regarding digestion and absorption. Testing for starch, glucose and protein enables learners to develop skills in recording observations The investigation into the energy content of different foods will allows mathematical analysis and present reasoned explanation including relating their data to a hypothesis. There will also be opportunities to analyse data from food labelling regarding sugar, fat and salt content in foods.	Soluble insoluble iodine Benedict's reagent Biuret solution Carbohydrase Protease Lipase Oesophagus peristalsis emulsification glycogen

Learning Objectives and Outcomes: Students should be able to :

a) the need for digestion; the breakdown of large molecules into smaller molecules so they can be absorbed for use by body cells
(b) the digestion of larger insoluble molecules into their soluble products which can then be absorbed: fats made up of fatty acids and glycerol; proteins made up of amino acids; starch (a carbohydrate), made up of a chain of glucose molecules
(c) the tests for the presence of: starch using iodine solution; glucose using Benedict's reagent; protein using biuret solution
(d) the role of the following enzymes in digestion: carbohydrase; protease; lipase
(e) the structure of the human digestive system and associated structures: the mouth, oesophagus, stomach, liver, gall bladder, bile duct, pancreas, small intestine, large intestine, anus and be able to label these on a diagram
(f) the role of the following organs in digestion and absorption: mouth, stomach, pancreas, small intestine, large intestine, liver
(g) how food is moved by peristalsis
(h) the function of bile, secreted by the liver and stored in the gall bladder, in the breakdown of fats
(i) how soluble substances can be absorbed through the wall of the small intestine and eventually into the bloodstream and how Visking tubing can be used as a model gut, including the limitations of the model
(j) the fate of the digested products of fats, carbohydrates and proteins: fatty acids and glycerol from fats provide energy; glucose from carbohydrate provides energy or is stored as glycogen; amino acids from digested proteins are needed to build proteins in the body
(k) the need for a balanced diet, including: protein, carbohydrates and fats, minerals (iron),vitamins (vitamin C), fibre and water
(l) the fact that different foods have different energy contents and that energy from food, when it is in excess, is stored as fat by the body
(m) the implications, particularly for health, of the sugar, fat and salt in foods