



CHAPTER 7.4 DIGESTION WORKSHEET



Imagine that you have just taken a meal which contains all the nutrients (carbohydrates, protein, fats, vitamins, minerals, water and fibre).

Fill in the blanks to complete the description what happens to the food and these nutrients in the alimentary canal (from the mouth to the rectum).

In the mouth, both and digestion take place. Mechanical digestion is the breakdown of food into pieces without chemical change to the food molecules. In the mouth, mechanical digestion occurs when the incisor teeth are used for food, the canine teeth are used for food, and the premolars and molars are used for food. Chemical digestion also takes place in the mouth. Chemical digestion is the breakdown of, insoluble molecules into small, molecules. The salivary glands secrete the enzyme into the mouth and this enzyme breaks down starch into The protein and fats that are present in the meal are not chemically digested in the mouth. The mixture of food and saliva forms a ball-like structure called a bolus. The bolus is swallowed and enters the, a long tract that leads to the stomach. The bolus is moved down the oesophagus to the stomach by, a series of wave-like muscle contractions.

In the stomach, juice, which contains acid and the enzyme, is secreted. This enzyme breaks down into The hydrochloric acid in the gastric juice provides a pH. This is important because at pH, the enzymes of the microorganisms found in food will be Besides that, it also provides a low pH which is the optimum pH for the activity of

Next, the mixture of partially digested food and gastric juice is released from the stomach into the, which is the first part of the small intestines. Here, is secreted. Bile is produced by the and stored in the Bile has two roles. First of all, bile plays a role in the acidic mixture of food and gastric juices entering the duodenum from the stomach. This is important because the enzymes working in the small intestines have an optimum pH of about 8 and if the conditions are too acidic, these enzymes may Secondly, bile also fats (breaks fats into smaller droplets) and this increases the of the fat droplets so that the chemical digestion of fat molecules can occur faster. In addition to bile,

..... juice is also secreted by the into the duodenum. This juice contains three enzymes (....., and) as well as which neutralises the mixture of food and gastric juice entering the duodenum from the stomach. The enzyme breaks down fats into and The enzyme breaks down protein into The enzyme breaks down starch into, which is a disaccharide. Maltose must still be broken down into smaller molecules called before it can be absorbed from the small intestines into the blood. This process takes place in the small intestine, as the enzyme which breaks down maltose into is found on the of the epithelium lining the small intestine.

Only when the large, insoluble molecules like protein, fats and starch have been broken down into small, molecules like amino acids, fatty acids, glycerol and glucose, these small molecules can finally be into the blood in the, the second part of the small intestine. Absorption is defined as the movement of food molecules and ions through the of the intestine into the

Vitamins, minerals and water do not need to be broken down as they are already small enough to be absorbed into the blood. Water is absorbed in both the intestine and the, but most absorption of water happens in the intestine. is a large molecule that cannot be digested by humans because humans do not produce the enzyme that can break down this large molecule.

Food that has not been or absorbed will be passed out as through the This process is called Prior to this, the faeces are stored in the