

Digestion and metabolism essay

[Health & Medicine](#), [Body](#)



Digestion is the mechanical and chemical break down of large food particles to smaller molecules that can be taken up into the blood (Winfred, 2005). The breakdown of large food starts in the mouth, through chewing, and goes all the way to the anus. The presence of saliva in the mouth that contains saliva amylase helps mechanical breakdown of food into bolus. The bolus then enters the stomach through the esophagus by a wavelike movement called peristalsis to the stomach. The churning of food and mixing of food begins in the stomach where both hydrochloric acid and gastric juice are also secreted. Gastric juice has digestive enzyme pepsin that partially digests proteins and enzyme rennin in infants for digestion of milk. Therefore, digestion of proteins begins in the stomach (Christophe & DeVriese, 2000). In addition, hydrochloric acid has three main roles, it facilitates the release of an enzyme, which helps in protein digestion, besides providing an ideal pH to activate the enzyme pepsin, and lastly it gets rid of microorganisms present in chyme. Once the food bolus is in the stomach, it mixes with hydrochloric acid and gastric juice to form chyme, and eventually enters the small intestines through pyloric Sphincter (Christophe & DeVriese, 2000). The small intestines have three parts; the duodenum, jejunum and ileum. The pancreas secretes pancreatic enzyme, while the liver secretes bile into the small intestines.

Pancreatic juice has digestive enzymes specifically; lipase, amylase and trypsin. Enzyme amylase facilitates the breakdown of maltose into glucose, lipase splits fats into glycerol, and the enzyme trypsin stimulates the breakdown of partially digested proteins that can be soluble. The presence of bile in the small intestines helps in emulsification of fats where large

particles of fats are broken to soluble molecules, and detoxifies hazardous chemicals present in chyme (Christophe & DeVriese, 2000). The chyme then enters the last part of the small intestine, where digested proteins, vitamins, fats and carbohydrates are absorbed into the blood stream by the process of diffusion.

Absorption occurs in the small intestines where the products of digestion enter into the blood system. The presence of finger like projections in the small intestines increases the surface area and speed for incorporation of glucose, electrolytes and amino acids by diffusion. The absorbed components diffuse into the body tissues by assimilation and used energize and nourish the body, allowing it to perform varied functions (Winfred, 2005). The waste products from the process solidify and are subsequently expelled by defecation.

Accessory Organs in Digestion

The Liver, the gall bladder and the pancreas play different roles to complete the process of digestion. The liver secretes a liquid called bile, it contains bile salts for emulsification of fats, and also neutralizes the acid facilitates the release of pancreatic enzymes. The main function of the liver is to detoxify microorganisms that may be harmful to one's health. The gall bladder acts as storage and concentrates bile from the liver. When food rich in fats reaches the digestive tract, the gall bladder releases bile that stimulates immediate release of cholecystokinin. The concentrated bile in the gall bladder facilitates emulsification of fats. Lastly, the ultimate accessory organ is the pancreas which releases digestive enzymes, including the enzyme lipase aid in the digestion of fats, trypsin that digests proteins and the

enzyme amylase facilitates the breakdown of starch and also secretes bicarbonates that neutralize the acid in the small intestines.

References

Christophe, A., & DeVriese, S. (2000). Fat Digestion and Absorption. New York: The American

Oil Chemists Society.

Gropper, S., Smith, J., & Groff, J. (2009). Advanced Nutrition and Human Metabolism. Boston:

Cengage Learning.

Winfred. F. R. (2005). Metabolism. New York: Panthen.