

The digestive system from the esophagus to the anus critical thinking examples

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The esophagus is simply a tube that transports food to the stomach after being swallowed from the mouth (Cleveland Clinic, 1). Swallowing ensures that epiglottis in the throat is closed hence the food moves down the esophagus, preventing it from moving down through windpipe to the lungs. The contraction and relaxation of the muscles within the esophagus enables the food to move down hence this serves as its anatomical adaptation. This paper traces the pathway of food from the esophagus to the stomach, indicating the anatomical adaptations of each organ involved (Cleveland Clinic, 1).

The Stomach

This is the initial stopping point of food from the esophagus. This is a kind of a sack but made out of muscles and its volume is approximately 50ml when empty but after a meal, it has an ability of expanding to accommodate up to 1.5 liters. Anatomical adaptation here is that its walls consist of three diverse layers of muscles that enable it to churn food around, ensuring it is properly mixed with acidic digestive juices available here.

The Small Intestine

This is a tube whose length is approximately 22 feet and serves as a key organ within the digestive system because this where real digestion happens. Here small quantities of chyme are allowed in at short intervals through the pyloric sphincter. The anatomical adaptations here is that the design of the sphincter allows it to only open partially to ensure that big particles are kept within the stomach for further mixing with the available hormones and break down. Digestion of fats and its subsequent absorption

happens here with the aid of three significant organs; pancreas, gall bladder and the intestinal walls (Cleveland Clinic, 1).

Additional adaptations entail its inner surface being folded into finger-like structures referred to as villi. The villi amplify the absorption's surface area to a great extent. Digested food is received from the villi by blood vessels and "transported to the liver by the blood stream through the hepatic portal vein" (Cleveland Clinic, 1). The unabsorbed remains of the whole process in the small intestine get at its end, entering the large intestine.

The Large Intestine

Its length is approximately 1.5 meters and it has more than 400 varied species of bacteria that aids in breaking down and utilizing food residues that have not been digested, majorly dietary fibers. It absorbs water from the remains as they move down through it, forming faeces as the final products that is stored in the rectum and later excreted via the anal opening from the body.

Rectum

This is a chamber that is about 8 inch long connecting the large intestine to anus (Cleveland Clinic, 1). Its main function is getting faeces from the large intestines. Its ability to contract when the sphincter relaxes ensures that its content is disposed. In a situation where the stool cannot be disposed, rectum will accommodate it after the contraction of the sphincter hence temporarily eliminating the sensation.

Anus

This forms the last part of the digestive system. Its length is approximately 2 inches and it is made up of 2 anal sphincters (external and internal) and pelvic floor muscles (Cleveland Clinic, 1). Its upper lining is designed to detect rectal contents. It is adapted through being surrounded by sphincter muscles that control the flow of faeces. Additionally, pelvic floor muscles are in such an angle with the anus and the rectum that prevents the stool from being discharged while unnecessary. On the other hand, its internal sphincter muscle is normally tight apart from the time when the stool is entering the rectum; this helps us to hold up the stool up to the time one gets to the toilet.

Works Cited

Cleveland Clinic. The Structure and Function of the Digestive System. 2011. Web. 19 April, 2012.