

## 22.1: Digestion of Carbohydrates

### Learning Objectives

- Describe digestion of carbohydrates.

The first stage of catabolism is **digestion**, in which food molecules are broken down into smaller molecules. Carbohydrate digestion begins in the mouth (Figure 22.1.1) where salivary  $\alpha$ -amylase attacks the  $\alpha$ -glycosidic linkages in starch, the main carbohydrate ingested by humans. Cleavage of the glycosidic linkages produces a mixture of dextrans, maltose, and glucose. The  $\alpha$ -amylase mixed into the food remains active as the food passes through the esophagus, but it is rapidly inactivated in the acidic environment of the stomach.

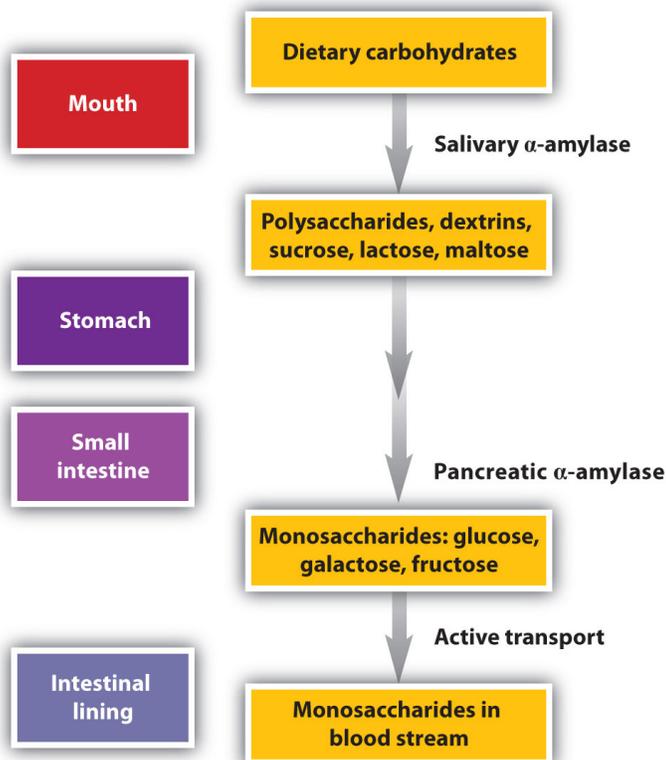


Figure 22.1.1: The Principal Events and Sites of Carbohydrate Digestion

The primary site of carbohydrate digestion is the small intestine. The secretion of  $\alpha$ -amylase in the small intestine converts any remaining starch molecules, as well as the dextrans, to maltose. Maltose is then cleaved into two glucose molecules by maltase. Disaccharides such as sucrose and lactose are not digested until they reach the small intestine, where they are acted on by sucrase and lactase, respectively. The major products of the complete hydrolysis of disaccharides and polysaccharides are three monosaccharide units: glucose, fructose, and galactose. These are absorbed through the wall of the small intestine into the bloodstream.

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