Mastication Encyclopedia Article

Mastication

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Contents

Mastication Encyclopedia Article.....1

Contents.....2

Mastication.....3

Mastication

Mastication is also referred to as chewing. It is the first step in the breakdown of complex blends of nutrients into their energy-producing basic components.

When chunks of food are masticated, they are broken into smaller pieces. This increases the surface area that is available for digestive **enzymes** to attack. The act of chewing also includes the release of **saliva**, which softens the food and, because of salivary **mucus**, makes the food slippery enabling the pieces to be swallowed. Larger pieces of dry food are difficult to swallow and can even become lodged in the esophagus (the digestive tract tube that leads from the back of the throat to the stomach).

Saliva also functions to begin the **digestion** of food. Saliva contains the enzymes ptyalin and amylase, which digests starches into sugars, and lipase, which digests fats. Furthermore, saliva contains a compound called bicarbonate of soda that can neutralize acidic or alkaline compounds present in the food or drink.

The motions of mastication are stimulated by the presence of food in the mouth. A reflexive action is the relaxation of the muscles of the lower jaw, which causes some muscles that control the mouth to contract. This in turn causes the mouth to close, helping to contain food in the mouth. Mastication then becomes an orchestrated effort involving the tongue, lips, cheeks and the lower jaw to maintain the food between the grinding teeth. For example, the tongue continuously re-positions food by squeezing food against the hard upper palate of the mouth, sweeping the food forward and, by lowering the back portion of the tongue to create negative pressure, causing the food to drop down onto the lower teeth. These motions can be occurring within seconds and occur unconsciously.

The reflexive nature of mastication has been known for a long time. Over 150 years ago the rhythmic jaw movements of chewing were observed in anencephalic human infants. Anencephaly is an always lethal condition (minutes to days after birth) where the top of the **skull** fails to develop, leaving the **brain** exposed and sometimes malformed in those infants who survive to birth.