Nutrition in Animals

Yummy, this would taste so good! Do you know what happens to the food when it goes inside your body?

What is Digestion?

Our body has a huge network of various glands and organs which absorbs essential nutrients from food and discards the unimportant parts.

> Food is made up of complex substances like carbohydrates, fats, and proteins, which cannot be utilised as such.

Definition: The breakdown of complex components of food into simpler substances is called digestion.

The Human Digestive System: An Overview

The food inside our body passes through an alimentary canal, also known as the digestive tract.

Parts of the Alimentary Canal:

- Buccal cavity
- Food pipe or oesophagus
- Stomach
- Small intestine
- Large intestine
- Anus

Types of Digestion:

- **Mechanical digestion:** The physical breaking down of food.
- **Chemical digestion:** The chemical breakdown of food into molecules the body can absorb.

Digestion in the Mouth and Oesophagus

Mouth

Mechanical digestion (chewing) and chemical digestion (saliva breaking down starches).

Oesophagus

Food pipe movements force the soft food mass to the stomach.

Ingestion: The process of taking food into the body.

The Stomach – The Widest Part

The stomach is a thick-walled, U-shaped bag where food is churned and mixed with digestive juices, including hydrochloric acid.

1

Protein Breakdown

Chemicals break down proteins into simpler substances.

2

Protection

A mucus lining protects the stomach from acids.

3

Chyme Formation

After about four hours, food becomes chyme and moves to the small intestine.

The Small Intestine – Nutrient Absorption Hub

The longest part of our digestive system, about 7.5 meters long and highly coiled, where most nutrients are absorbed.

Liver

Secretes bile juice (stored in gall bladder) for fat digestion.

Pancreas

Produces pancreatic juice to break down proteins and carbohydrates.

Intestinal Juices

Complete digestion: carbohydrates to glucose, fats to fatty acids/glycerol, proteins to amino acids.

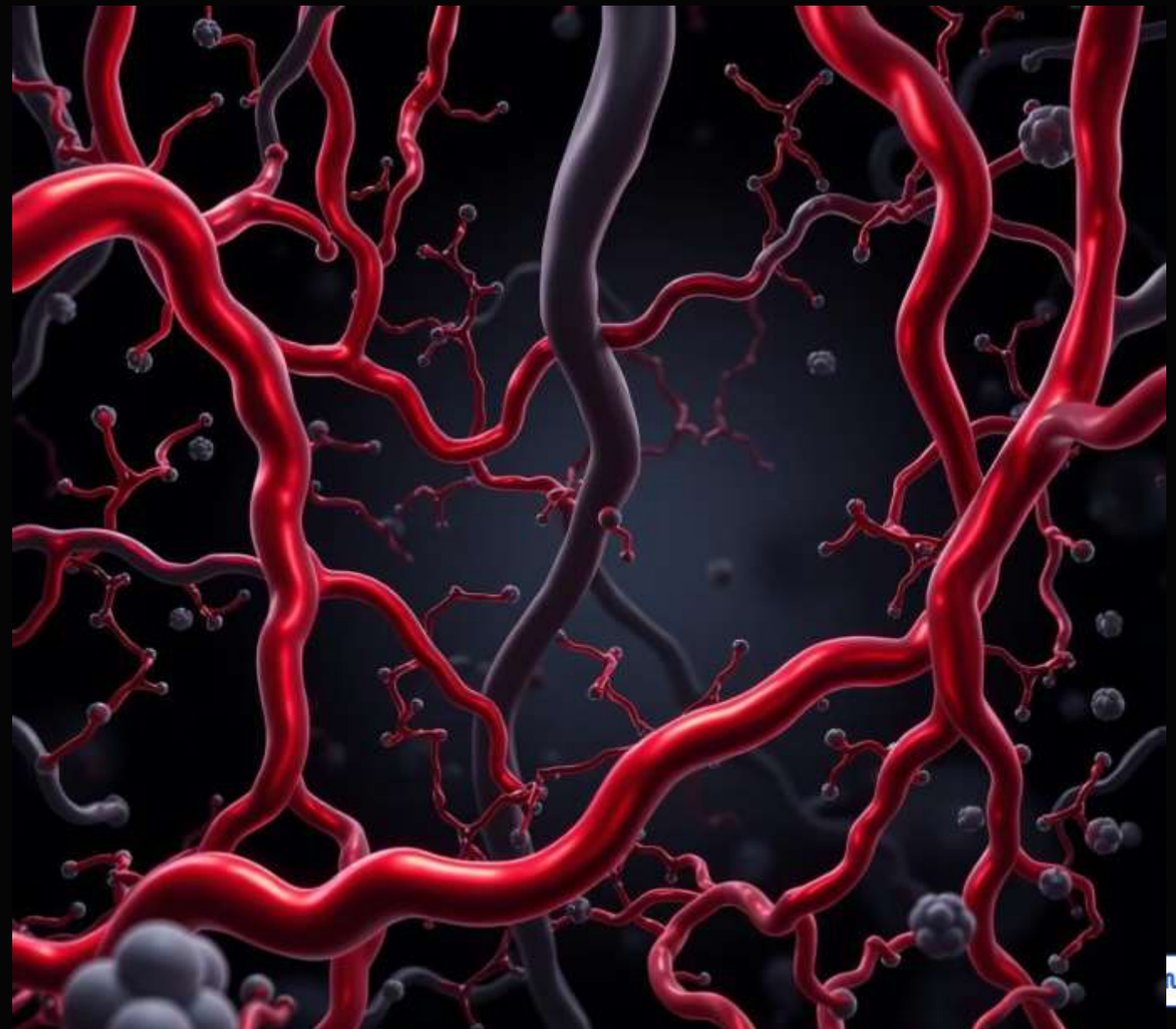
Absorption and Assimilation

Absorption

Digested food passes into the bloodstream via tiny, finger-like villi in the small intestine, increasing surface area.

Assimilation

Absorbed substances are transported to organs and used to build complex substances like proteins.



The Large Intestine and Elimination (Egestion)

1

Water Absorption

Large intestine absorbs most water and salts from undigested food, preventing dehydration.

2

Waste Movement

Solid waste moves to the rectum.

3

Egestion

Fecal matter is removed through the anus.

Digestion in Grass-Eating Animals (Ruminants)

Grazing animals like cows are ruminants, often chewing continuously.

Ingestion

Quickly ingest and swallow grass.

Rumen Storage

Store grass in the rumen, where it becomes cud (partially digested).

Rumination

Cud returns to mouth in small lumps for re-chewing.

Digestion in Amoeba – A Simple Organism

Amoeba, a single-celled pond organism, digests food without a mouth or digestive system.

Pseudopodia

Uses finger-like projections to capture microscopic food.

Food Vacuole

Food trapped inside; digestive juices break it down.

Expulsion

Undigested food expelled by the vacuole.