

KARACHI EDU COACHING CENTER • CLASS 9 BIOLOGY

Chapter 8: Nutrition

Comprehensive study of autotrophic & heterotrophic modes, plant mineral nutrition, photosynthesis, and human digestive anatomy.

Modes of Nutrition



Autotrophic Nutrition

Synthesize organic compounds from inorganic raw materials using light or chemical energy.



Heterotrophic Nutrition

Depend directly or indirectly on autotrophs through holozoic, saprophytic, or parasitic modes.

Essential Mineral Elements

Large Quantity Required

Macronutrients

Carbon, Hydrogen, Oxygen, Nitrogen, Phosphorus, Potassium, Calcium, Magnesium, and Sulphur. Vital for structural and functional integrity.

Trace Quantities Required

Micronutrients

Iron, Manganese, Boron, Zinc, Copper, Molybdenum, and Chlorine. Function primarily as essential enzymatic cofactors.

Photosynthesis Phases



Light-Dependent Reactions

Occurs in thylakoid membranes. Photolysis of water releases oxygen while producing ATP and NADPH.



Light-Independent Reactions

Occurs in the stroma (Calvin Cycle). Fixes and reduces carbon dioxide into glucose using chemical energy.

Oral Cavity & Ingestion

Teeth Mastication

Mechanical breakdown via incisors, canines, premolars, and molars.

Salivary Amylase

Secreted by salivary glands to convert complex starch into maltose.

Bolus Formation

Tongue manipulation pushes lubricated food down via esophageal peristalsis.

Stomach & Small Intestine

Gastric Digestion

Hydrochloric acid activates pepsin to break down proteins, churning food into acidic chyme.

Intestinal Secretions

Liver bile emulsifies fats while pancreatic enzymes complete carbohydrate and protein digestion.

Absorption & Egestion

Villi & Microvilli

Massive surface area absorption into blood capillaries and lacteal vessels.

Large Intestine

Reabsorbs water and minerals, consolidating waste into solid faeces.

Egestion

Temporary storage in rectum and final expulsion through the anus.

Questions & Discussion

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