



Ratna Sagar

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As per the latest ICSE syllabus

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Revised and Updated

LIVING SCIENCE BIOLOGY

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ICSE

Living Science

Biology

Class 9

Chapter 10 **Tooth – Structure and Functions**



LEARNING OBJECTIVES

Structure and types of teeth

- ❖ Structure and functions of teeth in humans

General structure of a tooth

- ❖ Dentition as per diet

How are heterotrophic animals classified on the basis of food habits?

On the basis of food habits, heterotrophic animals are classified into four types – herbivores, carnivores, omnivores and carrion-feeders.



Heterotrophic animals

- ❖ **Herbivores** are those animals which **feed only on plants** and plant products. For example, cow, goat, buffalo, elephant, sheep, etc., are herbivores.
- ❖ **Carnivores** are those animals which **eat flesh of other animals**. For example, lion, tiger, leopard, etc., hunt and kill their prey and feed on them, thus they are carnivores.
- ❖ **Omnivores** are those animals which **feed on plants as well as flesh of animals**. For example, human and domestic cat are omnivores.
- ❖ **Carrion-feeders** are animals which **feed on dead organisms**. For example, vulture and hyena are carrion-feeders.

Structure and types of teeth

Most animals have teeth in their jaws. Teeth are used to cut and break the food into smaller parts. **The kind, number and arrangement of teeth in a person or animal is called dentition.** Dentition is of two types:

- ❖ **Homodont:** All the teeth in the jaws are similar in shape and structure. Examples: frog, fish, etc.
- ❖ **Heterodont:** The teeth in the jaws are not similar in shape and structure. Examples: cows, humans, etc.

There are four types of teeth in mammals: incisors, canines, premolars and molars.



Structure and functions of teeth in humans

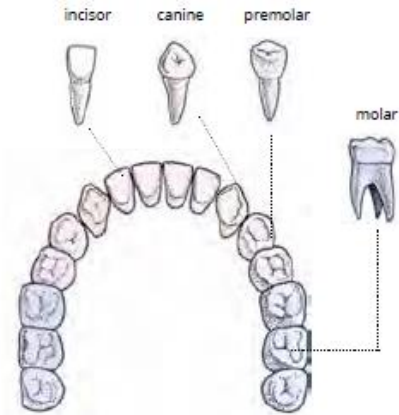
❖ **Incisors:** These are situated at the front of the buccal cavity. They are **flat and straight with sharp edges** which are **used for cutting and biting** the food.

❖ **Canines:** These are situated one on either side of the incisors in each jaw. These are **sharp and pointed for holding** and **tearing** the food.

❖ **Premolars:** There are two premolars situated next to the canines. Each premolar **possesses one or two roots and two cusps** (projections on the surface of a tooth). The premolars are **specialized for crushing and grinding** the food.

❖ **Molars:** These are the last three teeth in each jaw. They have more than one root. **Molars in the upper jaw have three roots, while those in the lower jaw have two roots.** Each molar has four or five **cusps**. They are used for **crushing and grinding the food**. The last molar of each side in each jaw is also called the **wisdom tooth**.

In humans, teeth appear in two sets during life. The **milk teeth or deciduous teeth** appear first. These are progressively replaced by the **permanent teeth** by about 12 years of age. In humans,

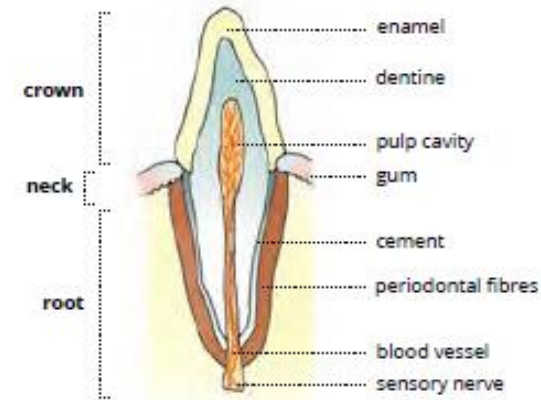




there are 32 teeth in the two jaws (16 in each jaw), of which 8 are incisors (I), 4 are canines (C), 8 are premolars (PM) and 12 are molars (M).

General structure of a tooth

Each tooth consists of a **crown**, which is the visible part of the tooth and the **root** which is the part embedded in a cup-like socket of the jawbone. The **neck** of the tooth is surrounded by the gum. The crown is covered with **enamel**. Enamel is the hardest substance in the body. Beneath the enamel is **dentine** which forms the bulk of the tooth.



Dentition as per diet

Dentition in animals is based on their feeding habits.

Herbivores, such as sheep, cows and horses have **teeth with broad ridged surfaces** that are suitable for **grinding** tough plant material. The incisors and canines are generally **modified for biting off pieces of vegetation**.

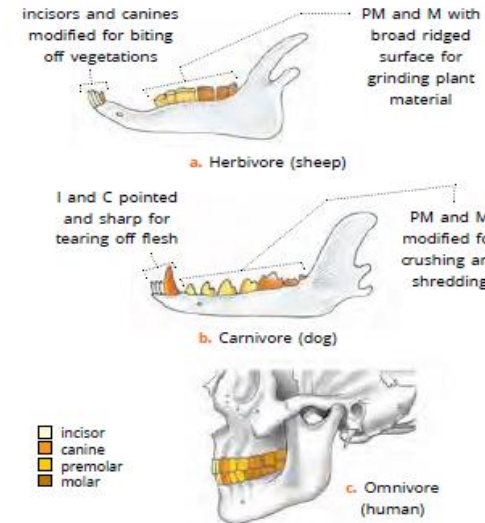
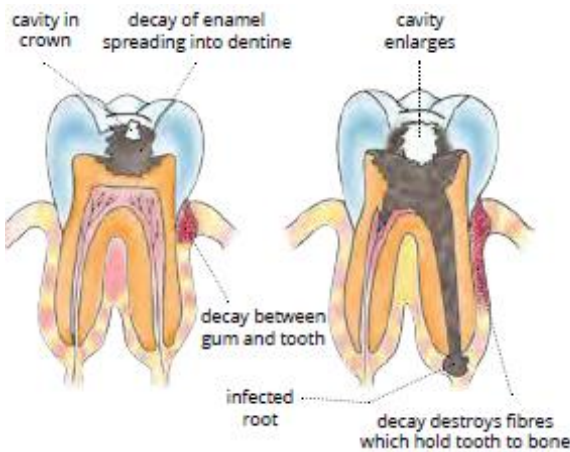
Carnivores, such as dog and cat, have pointed **incisors and canines** that can be used to kill prey and **tear off flesh**. The premolars and molars are modified for **crushing and shredding**.



Omnivores, such as human beings, are adapted for eating both vegetation and meat and have a relatively mixed dentition. There are two incisors for biting and cutting, one canine for tearing, two premolars for grinding and three molars for crushing .

Dental caries or tooth decay

Tooth decay is one of the most widespread diseases of teeth. In dental caries or tooth decay, the dentine and enamel on a tooth are gradually broken down.



It begins when bacteria such as *Streptococcus mutans*, feed on the sugars that remain around our teeth when we eat and release acids onto the teeth. The bacteria become fixed to the teeth with dextran, a polysaccharide. The bacteria, dextran and other debris are collectively known as dental plaque. The acids produced by bacteria start to break down tooth enamel and plaque reacts with chemicals in saliva, hardening to form calculus. This results in swelling, infection and pain.



SUMMARY...

- ❖ In homodont dentition, all the teeth of the jaws are similar in shape and structure while in heterodont dentition, all the teeth are different in shape and structure.
- ❖ The mammals have four types of teeth – incisors (cutting and biting), canines (tearing), premolars and molars (crushing and grinding).
- ❖ Crown, enamel, dentine, root, odontoblast, pulp cavity, cement and fibres are the main parts of a tooth.
- ❖ In humans, teeth appear in two sets during life, the milk or deciduous teeth and permanent teeth.



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