



Tongue and Salivary Glands in Domestic Animals Structure, Function and Clinical Importance

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The tongue and salivary glands are essential accessory organs of the digestive system in domestic animals. The tongue plays a vital role in prehension, mastication, taste perception, and swallowing, while salivary glands contribute to lubrication of food, digestion, buffering of rumen contents, and maintenance of oral health. Structural and functional variations in these organs reflect dietary adaptations among herbivores, carnivores, and omnivores. Disorders of the tongue and salivary glands commonly affect feed intake and animal productivity. This article reviews the anatomy, histological features, functions, and clinical significance of the tongue and salivary glands in domestic animals, with emphasis on their applied veterinary importance.

Keywords: Tongue, Salivary glands, Domestic animals, Veterinary anatomy, Digestion, Oral cavity

Introduction

The oral cavity is the initial site of digestion in domestic animals and contains several specialized structures that aid in food intake and processing. Among these, the tongue and salivary glands play a central role in mechanical and chemical digestion (Dyce et al., 2018). The tongue is a muscular organ occupying the floor of the mouth, while salivary glands are exocrine glands that secrete saliva into the oral cavity (König & Liebich, 2020). In veterinary anatomy, understanding the tongue and salivary glands is important not only from a structural perspective but also from a functional and clinical viewpoint. Diseases affecting these organs often result in dysphagia, reduced feed intake, salivation abnormalities, and decreased productivity in farm animals (Getty, 1975). Hence, detailed knowledge of their anatomy and functions is essential for veterinary students and clinicians.

Anatomy of the Tongue

The tongue is a highly mobile, muscular organ composed mainly of striated muscle fibers arranged in longitudinal, transverse, and vertical directions, allowing precise movements (Dyce et al., 2018). It is covered by mucous membrane and attached caudally to the hyoid apparatus. Anatomically, the tongue is divided into the apex, body, and root. This division is consistent across domestic animals, though size and shape vary with species (König & Liebich, 2020).

Papillae of the Tongue

The dorsal surface of the tongue bears specialized projections known as papillae. These papillae are classified into mechanical and gustatory types (Dyce et al., 2018). Mechanical papillae such as filiform, conical, and lenticular assist in manipulation of food and are especially well developed in ruminants, reflecting their fibrous diet (Getty, 1975). Gustatory papillae including fungiform, vallate, and foliate contain taste buds and are involved in gustatory sensation (König & Liebich, 2020).

Species Differences in Tongue

Cattle possess a rough tongue with prominent lenticular papillae, aiding in grasping coarse fodder (Dyce et al., 2018). The horse tongue is smoother and highly sensitive, assisting in selective feeding. Dogs and cats have a flexible tongue adapted for lapping liquids and grooming (Getty, 1975).

Functions of the Tongue

The tongue performs several vital functions including prehension of food, mastication and bolus formation, taste perception, swallowing, and vocalization in some species (Dyce et al., 2018). Loss of tongue function significantly impairs feeding and overall health of animals (König & Liebich, 2020).

Salivary Glands in Domestic Animals

Salivary glands are exocrine glands that secrete saliva into the oral cavity through ducts. Saliva is composed of water, electrolytes, mucus, enzymes, and antimicrobial substances (Dyce et al., 2018). Based on secretion type, salivary glands are classified as serous, mucous, or mixed (König & Liebich, 2020).

Major Salivary Glands: The parotid gland is the largest salivary gland and is mainly serous in nature. It produces large quantities of watery saliva, especially in ruminants (Dyce et al., 2018). The mandibular gland is mixed in nature and contributes both serous and mucous secretions (König & Liebich, 2020).

The sublingual gland is predominantly mucous and helps in lubrication of feed (Getty, 1975).

Minor Salivary Glands: Minor salivary glands include labial, buccal, palatine, and lingual glands. Though small, they play an important role in maintaining moisture of the oral mucosa (Dyce et al., 2018).

Functions of Saliva

Saliva lubricates food, initiates digestion, buffers rumen contents, maintains oral hygiene, and facilitates swallowing (König & Liebich, 2020). In ruminants, saliva plays a crucial role in maintaining rumen pH and preventing acidosis (Getty, 1975).

Clinical Significance

Diseases of the tongue include glossitis, tongue injuries, foreign body penetration, and neoplasia, which may cause dysphagia and anorexia (Dyce et al., 2018). Salivary gland disorders include sialadenitis, salivary fistula, and obstruction of salivary ducts (König & Liebich, 2020). Excessive salivation or reduced salivation adversely affects feed intake and digestion, particularly in ruminants (Getty, 1975).

Conclusion

The tongue and salivary glands are indispensable components of the digestive system in domestic animals. Their anatomical structure reflects functional adaptation to different feeding habits. Proper functioning of these organs ensures efficient prehension, mastication, digestion, and maintenance of oral health. Disorders affecting the tongue and salivary glands can significantly compromise animal welfare and productivity. Therefore, a thorough understanding of their anatomy, functions, and clinical relevance is essential for effective veterinary diagnosis and treatment (Dyce et al., 2018; König & Liebich, 2020).

1. References

- Dyce, K. M., Sack, W. O., & Wensing, C. J. G. (2018). *Textbook of Veterinary Anatomy* (5th ed.). Elsevier.
- König, H. E., & Liebich, H. G. (2020). *Veterinary Anatomy of Domestic Mammals* (7th ed.). Thieme.
- Getty, R. (1975). *Sisson and Grossman's The Anatomy of the Domestic Animals*. W.B. Saunders Company.