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Comparative Anatomical, Morphometrical, and Histological Studies of the Alimentary Canal Between the White-Eared Bulbul and the Russian Bulbul

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Abstract

Purpose: The white-eared bulbul (*Pycnonotus leucotis*) is a common ornamental songbird in Iraq.

Objective: Yet little information is known about its digestive system. The current study aimed to explain the anatomical, morphometrical, and histological features of its elementary tract and compare them with those of the Russian bulbul (*Pycnonotus megarhynchus*). **Methods:** morphometrical measurements were taken to assess the digestive tract, including the length of the small intestine and goblet cells, then the tissues were taken for preparation using routine histological staining. **Results:** The digestive tracts of the two species differed slightly in length of small intestine and numbers of goblet cells, reflecting differences in body size and diet. The ventriculus of the white-eared bulbul was less developed compared to that of the Russian bulbul. In both species, the small intestine included three sections—duodenum, jejunum, and ileum—without clear anatomical boundaries. Histologically, the mucosa was formed from villi that were lined with simple columnar epithelium, goblet cells, and smooth muscle fibers. Goblet cells were more abundant in the Russian bulbul, with numbers increasing toward the ductal opening. No meaningful histological differences were found in the esophagus and large intestine between the two species. **Conclusions:** The two bulbul species show slight anatomical and histological variations in their digestive tracts. The higher density of goblet cells in the Russian bulbul may reflect differences in dietary adaptation.

Keywords: Esophagus; Goblet cells; Large intestine; Small intestine; Ventriculus.

Introduction:

Birds are warm-blooded vertebrates with feathers, toothless beaks, and hard-shelled eggs. There are approximately 11,000 species, classified into 44 orders. More than half of them are passerines [1]. The digestive system is essential in most animals, particularly birds, since it provides energy for everyday activities by consuming, digesting, and absorbing food [2, 3]. Birds have a thoracic cavity with no diaphragm. The bird's esophagus is a long, inflatable tube that connects the oropharynx with the

ventral portion. It is positioned on the right side of the neck, dorsally to the trachea and the thoracic inlet. The esophagus returns to the midline and extends ventrally, forming the gizzard [4]. It is worth noting that the common quail's esophagus is separated into three regions: the cervical, crop, and thoracic [5]. Granivorous birds' intestines are tubular in form and have a smaller diameter than their gizzards. The duodenum, the first section of the small intestine, surrounds the pancreas and joins the hepatic and pancreatic ducts. The intestinal