

**College:** Veterinary Medicine

**Dept.:** Anatomy & Histology

**Certificate:** Master

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**Specialization:** Anatomy & Histology

**Title:**

**Anatomical and Histological study of Respiratory System White – cheeked Bulbul (*Pycnonotus leucotis*)**

**Abstract:**

The study aimed to describe the anatomical and histological feature of the respiratory system of a bird bulbul, sixty male birds Iraqi bulbul (White cheeks) genus (*pycnonotus leucotis*) non-pathogenic were used, they were divided into twenty-four birds for anatomical study, to describe the shape of the nostrils and the nasal septum, the form of nasal conchae, and the adjective of the structures of the larynx, trachea syrinx and lungs, in addition to the number and location of air sacs. Thirty six birds were used for the histological study which includes the description of the respiratory tract and the distribution of the mucous glands and cells within the epithelium of the respiratory tract.

Anatomical study showed that the nasal cavity was divided into two areas, the nostril in the form of a long narrow slit which contains horny flap (operculum) and nasal septum is completely divides the nasal cavity into two parts, rostral nasal conchae on the cranial and caudal of them middle nasal conchae.

The larynx appeared as a triangular-shaped mound, made up of single cartilage (cricoid, procricoid) and paired arytenoid cartilages. , while the epiglottis cartilages are absent in the larynx of the bulbul as in other birds. The tracheal appear s like a long tube composed of complete cartilaginous rings overlapping to each another. The bulbul syrinx is classified as tracheobronchial in type, and represents part of the tympanic .The middle part contains bulla on both sides, the number of broncho syringeal cartilage are five rings. The pulmonary primary bronchi consists of incomplete C shaped cartilages. The lung located at the cranio-dorsal part of the thorax and attached to the ribs that leave deep costal impressions on the costal surface which is un divided into lobes, and extended from the first to sixth rib, and have two surfaces (costal and visceral) its appeared as small in size with a pyramidal shapes and pink in color, as spongy organ.

The number of the air sacs in bulbul (nine) air sacs, paired of cervical, cranial and caudal thoracic and abdominal air sac, single air interclavicular sac. The shape and the locations of these sacs were studied by using the cold cure corrosion cast.

The histological examination confirmed that the conducting airway of the bulbul respiratory tract are lined by respiratory epithelium the ciliated pseudo stratified columnar epithelium that contained the mucous cells and intraepithelial glands. Two types of epithelial were lined of the larynx, non keratinized stratified squamous epithelium, that continuing as pseudostratified ciliated columnar epithelium with intra epithelial glands and goblet cells .This respiratory epithelium continues distally to line the trachea, the tympanic member of the syrinx form of psudostratified columnar epithelium.

The lining of the tertiary bronchi and atria are squamous epithelium or cuboid which doesn't have mucous cells and glands. The lungs showed the presence of a central area of the parabronchi which lead into the atria, and this led into air capillaries, the major part of parabronchial wall consist of smooth muscle.

The histochemical study involved an explanation of the mucous cells and glands within the epithelium of the respiratory tract (where these cells and glands in the epithelium of the larynx gave positive reaction with the dye PAS) while the tracheal mucosal cells gave positive reaction with the dye PAS. The collagen, elastic fiber and cartilage in lamina propria- sub mucous in the larynx and trachea are clear in blue color Mallory dye and pink Van Geison dye.

The scanning electron microscopy clarified that the surface of the tracheal epithelium in bulbul revealed only two cell types, the ciliated and nonciliated with microvilli, the ciliated cells were the most numerous. The transmission electron microscopy represent that the interior surface of the lung is secured by pneumocytes type I, II, which have short microvilli, the cytoplasmic contain organelles with numerous lamellar bodies.