



## Some Comparative Anatomical and Histological Studies on the Laryngeal Cartilages of Buffaloes, Camels and Donkeys

Eman A. Eshra\*, Mohamed A. Metwally, Hatem B. Hussieni, Ahmed A. Kassab

Department of Anatomy and Embryology, Faculty of Veterinary Medicine, Benha University, Egypt.

### ARTICLE INFO

#### Original Research

**Accepted:**  
17 December 2015

#### Keywords:

Camel  
Cartilage  
Buffalo  
Donkey  
Larynx

### ABSTRACT

Comparative studies concerned the upper air ways of domestic animals are few. So this study was carried out to compare between the larynx of buffaloes, camels and donkeys. The present investigation was carried out on 39 larynxes, 13 larynxes (7 males, 6 females) of each species. Ten heads from each species were used for gross anatomical study; the remained three heads were used for the histological study. Results revealed that, the laryngeal cartilages of the three species were consisted of three single cartilages; the thyroid, the cricoid and the epiglottis, and two paired cartilages; the arytenoid and the corniculate. The cuneiform cartilages were paired cartilages present only in the larynx of the donkey. Thyroid, arytenoid and cricoid cartilages were of hyaline type, while the epiglottis, cuneiform and corniculate cartilages and the vocal process of the arytenoid cartilage were of elastic type. The laryngeal epithelium of aditus laryngis, greater part of epiglottis and vocal folds was lined by non-keratinized stratified squamous epithelium. The remained parts of laryngeal epithelium from base of epiglottis and entire parts caudal to vocal folds were lined by pseudostratified columnar ciliated epithelium with goblet cells. The laryngeal glands of lamina propria were of mixed types in buffaloes and donkeys but in camels it was pure mucous glands. This study will fill a gap in the field of comparative anatomy and help other clinical investigation applied on these animals.

*J. Adv. Vet. Res. (2016), 6 (1):27-36*

## Introduction

Buffaloes (*Bos bubalis*), camels (*Camelus dromedarius*) and donkeys (*Equus asinus*), are the most common animals in Egypt and in other developing countries.

These animals have a significant contribution in the rural economy of Egypt. The buffaloes provide more than 5% of the world's milk supply. Their meat is very tender and palatable and is difficult to differentiate from beef. Their hides also are of significant importance in that they make superb leather products. Their dung is collected and used

as fertilizer. Camels provide human with milk, meat, wool, leather, and fuel from dried manure. Dromedary husbandry is increasing today, and is being recognized as an ecologically-sound method of producing protein rich food in arid areas (Nowak, 1999; Shackleton and Harestad, 2003).

The available literature concerning the anatomical and the histological studies concerning the larynx of buffaloes, camels and donkeys are few compared with the importance of these animals. So, the present investigation was carried out in order to give the fine details about the morphological structures of the laryngeal cartilages as well as their histological structure. Therefore, this study will fill a gap in the field of comparative anatomy

\*Corresponding author: Eman A. Eshra  
E-mail address: mevet213@gmail.com