

The respiratory system (ventilator system) is a complex system consist of several specific organs and structures used for process of respiration and involve in voice production and olfactory apparatus.

Respiratory System **consist of 3 parts :**

1-Conducting Portion: at which the air passes through to reach the respiratory portion it also act to filter, warm and moister the air

1-Nostriles.

2- Nasal Cavity.

3- Nasopharynx.

4- Larynx.

5-Trachea.

6- Bronchi and Bronchioles.

2- The Respiratory Portion: at which actual gaseous exchange takes place.

1- the respiratory bronchiole.

2- the alveolar sacs.

3- pulmonary alveoli + Blood Capillaries Network.

3- The pumping apparatus: group of abdominal and thoracic structures that contribute the expansion and contraction of the lungs

1- The two pleural sacs which envelope the lungs

2- The thoracic cage and the attached muscles.

3- Diaphragm.

Nostriles : (Nares) external openings situated on the nose have different shapes in different animals.

Comma shape in dog, cat and ox (oval or comma).

Round in pig.

Slit like in camel and sheep and goat.

In horse: in normal breathing crescent in shape. In forced breathing oval.

Nasal Cavity:

Large space filled with air divided by nasal septum into right and left halves, nasal cavity opens with pharynx through the (choana) caudally.

The nasal cavity include nasal conchae and meatus and paranasal sinuses

Topographically the nasal cavity divided into 3 regions

1-Vestibular region : the cranial part of nasal cavity , has the openings of nasolacrimal duct.

2-Respiratory region : the middle and largest part has the nasal conchae.

3- Olfactory region : the caudal part of nasal cavity has the ethmoid conchae.

Nasal conchae: Are thin narrow and curled bone shelf (like elongated sea shell)that originated from the lateral wall of the nasal cavity and occupy large part of nasal cavity, covered with mucous membrane involved with infiltration and humidification of air inhaled through the nose .

Types of nasal conchae

1-Dorsal concha, the largest and longest, most dorsal turbinate bone, occupy the dorsal part of nasal cavity.

2- Ventral concha: shorter and generally wider than dorsal conchae, occupy the ventral part of nasal cavity.

3-Ethmoidal conchae: smaller and more numerous lies ventral to the dorsal conchae.

In ruminant and dog the ethmoid concha is large and extends cranially so it is located between the dorsal and ventral conchae, so it is called middle concha.

Nasal Meatus: air ways passages through the nasal cavity forms as a result to present of nasal conchae (each half of nasal cavity have 4 meatuses.

1-Dorsal nasal meatus: between the roof of the nasal cavity and dorsal conchae.

2- Middle nasal meatus: is between the dorsal and ventral conchae.

3-Ventral nasal meatus: - is the largest lies between the ventral concha and the floor of the nasal cavity.

4-Common nasal meatus: the narrow space between the nasal septum and the conchae.

Vomeronasal organ : olfactory sense organ consists of a pair of 2 blind tubular mucous membranous diverticula , lying in the floor of the nasal cavity on either side of the nasal septum . It's about 20 cm in length in large animals ; 2-7 cm in small animals which also called Jacobson's organ and serves as an accessory olfactory organ .

Guttural pouch : large dilation of auditory tube or paired of air filled out - pouchings to the Eustachian canal , leading into the nasopharynx , situated between base of the skull and pharynx found in the equine and some other species . Its function is largely unknown but the hypotheses suggest it may influence internal carotid artery blood pressure and involve in Cerebral blood cooling mechanism .