

## Histological study of pharynx and different parts of hamster esophagus

Hamster is a group of rodents that belongs to the mouse family. Due to the similarity of the test results in humans and hamsters, this animal is widely used in experiments. Hamster life span is 2-3 years and they have different types. Among them are golden, Russian, white dwarf, Roborovsky Chinese dwarf, Tibetan dwarf, European and so on. The largest European hamster is 34 cm long and Angora is 18 cm long, which belongs to the golden hamster branch In 1977, Winans et al studied the olfactory tissue of male and female hamsters. They described the parietal region, which is related to the sense of smell, and studied the effect of zinc sulfate on it. In this research, the histological study of the pharynx, the beginning of the esophagus, the end of the esophagus, and the lower part of the esophagus of hamsters has been studied. Three adult male and female hamsters with an age group of more than 10 months were prepared and anesthetized using 10% chloroform, which led to their death. In order to prepare microscopic sections of the samples, the usual method of preparing tissue sections was used. Staining was done with hematoxylin eosin (H&E) method. According to the studies done by light microscope, the epithelial tissue of the pharynx is squamous and non keratinized, which lacks mucosal muscle. The covering tissue of the esophagus is squamous, and the muscular layer of the esophagus consists of two layers of smooth skeletal muscle. No differences were observed between male and female hamster.

The pharynx connects the oral cavity to the esophagus and the nasal cavity to the larynx: The pharynx includes the opening of the oral cavity (oropharynx region), nasal cavity, auditory tubes (nasopharynx), larynx and esophagus (laryngopharyngeal region). The wall of this area is made of mucosa, muscular layer of skeletal muscle and a layer of adventitia. The mucosa is covered by the corresponding squamous epithelium. Mucous-submucosa contains collagen and elastic fibers mixed with lymphatic tissue and mucous glands. The muscular layer consists entirely of skeletal muscle<sup>۱,۲</sup>. Adventitia is a type of dense and irregular connective tissue that connects the pharynx to the surrounding tissues. The esophagus connects the laryngeal region of the pharynx to the stomach and contains all the characteristic layers of a tubular organ of the digestive system. In carnivores, an internal annular fold called the threshold or pharyngeal line of the esophagus defines the junction of the laryngeal region of the pharynx and esophagus<sup>۱,۲</sup>. The muscular layer of the esophagus consists of two layers of muscle. In ruminants and dogs, the muscle layer is generally skeletal. Considering the similarity of the results of experiments on humans and hamsters, the purpose of this study is to examine the structure of the pharynx and different parts of the esophagus for histological examination during H&E staining in order to create a new perspective between the structure of the pharynx and different parts of the esophagus of humans and hamsters.

### Materials and methods

The materials needed in this research were 10% chloroform, formalin, paraffin, glycerin, hematoxylin, eosin, xylene, alcohol, lithium carbonate, distilled water, and ethanol. Three adult hamsters of both sexes over 10 years of age were prepared and 10% chloroform was used to anesthetize them, and this anesthesia led to their death. After dissection, the necessary tissues were extracted and stained with hematoxylin and eosin. They were examined with a light microscope.

### Pharynx



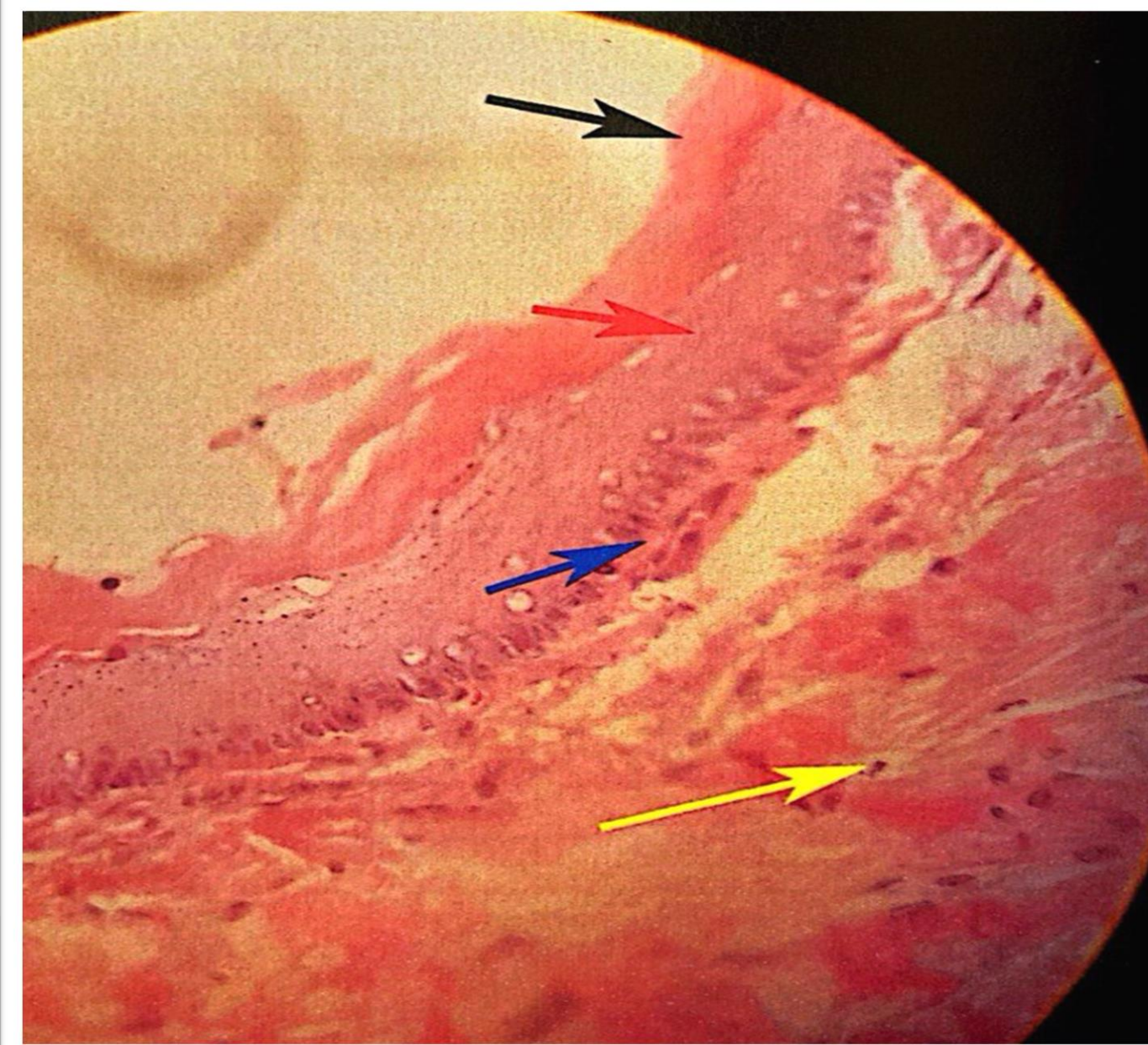
### Skeletal muscles

### Irregular dense connective tissue

### Parin

### Non keratin columnar squamous epithelium

### Esophagus



### Keratin columnar squamous epithelium

### Dead cells of the keratin layer

### Parin

### Longitudinal layer of the mucous muscle

Pharyngeal tissue is non keratinized columnar squamous. Esophageal tissue is keratin squamous columnar. It has two cervical and thoracic parts. In the conducted experiments, the tissue characteristics in humans and hamsters are similar. But they have a series of minor differences. However, no differences were observed among male and female hamsters.

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