Research Article

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Histo-Morphology Study of the Respiratory Portion of Goat Lung (*Capra Hircus*) in Baghdad Province

Noor Hussein Yousif

Natural History Research Center & Museum, University of Baghdad

Corresponding Author: husseiny620@gmail.com

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Abstract

The Histo-mrphology were directed on the pneumonic alveoli of 6 male goats. The respiratory portion is composed of typical cuboidal epithelial cells with Clara cell, however, alveolar ducts are lined by simple squamous epithelium and alveoli were generally circular structures that opened into the alveolar conduits and alveolar sacs or respiratory bronchioles. Alveoli were made out of two kinds of cells for example Type-I pneumocytes and Type-II pneumocytes. Previous framed the mainlining epithelial cells of alveoli which were squamous in sort having noticeable perinuclear territory and central found the core, while the last were cuboidal fit as a fiddle with the midway found core and periodically found among the Sort I cells in the alveolar epithelium. The lung pulmonary parenchyma was enveloped by the mesothelium (squamous epithelium) layer of visceral pleura.

Keywards: Histological Epithelium , Respiratory Portion , Alveoli ,Goat.

في بغداد دراسة نسيجية للجزء التنفسي من رئة الماعز

أجريت الدراسة النسيجية على الحويصلات الهوائية الرئوية لستة ذكور ماعز. اخذت من المسالخ في بغداد توضح فيهاالجزء التنفسي السفلي وتبين يتكون من خلايا ظهارية مكعبة نموذجية مع خلية كلارا ، إن القنوات السنخية مبطنة بظهارة حرشفية البسيطة والحويصلات الهوائية عبارة عن هياكل دائرية تفتح في القنوات السنخية والأكياس السنخية أو القصيبات التنفسية. تتكون الحويصلات الهوائية من نوعين من الخلايا على هي : الخلايا الرئوية من النوع الأول والخلايا الرئوية من النوع الثاني. الخلايا الظهارية الرئيسية للحويصلات الهوائية كانت عبارة عن خلايا حرشفية لها نواة ملحوظة ومركزية ، الجزء التنفسي كانت الظهارة مكعبة الموجود مع اللب في المنتصف تم العثور عليها بين خلايا النوع الأول في الظهارة السنخية. كما كانت الحمة الرئوية مغلفة بطبقة المتوسطة (الظهارة الحرشفية) من غشاء الجنب الحشوي.

Introduction

The Respiratory portion in all domestic animals are the effectual part of the gas exchange site, include the distal air space of the terminal bronchiole, these respiratory bronchioles was shortened tube opened to alveolar ducts, alveolar sacs, and alveoli. The large respiratory bronchioles were lined by simple ciliated cuboidal cells while the small lined by non-ciliated squamous cells, the human and animal respiratory bronchioles wall structures are like terminal bronchioles wall structures(1& 2).

Adult *Bidri* goat stated that the lungs of consisted of respiratory bronchioles, alveolar duct, alveolar sac, and alveoli, in adult *Bidri* goat respiratory bronchioles number was further more than in *Deccani* sheep and characterized as less wide lumen, line by simple cuboidal epithelium accompanied with few numbers of ciliated cuboidal epithelium (3). Its basal membrane consisted of connective tissue and smooth muscle fibers, while (4) in sheep (5) in goat reported non-ciliated flattened epithelial cells. 6&7 and 8), showed that the true respiratory bronchiole was missing in calf, horse, and buffalo respectively.

The respiratory bronchioles demonstrated that were not found in all species, the terminal bronchial may be opened directly into the alveolar ductules especially in the animals that have not respiratory bronchioles (9), the glands and cartilage were missing in their wall and the goblet cells were absent at the epithelial lining; just many brush cells of neuroendocrine granular cells at the bronchiolar epithelium (10).

The goat respiratory bronchioles well developed and distinguished, the lining epithelia was discontinuous simple cuboidal due to alveolipresence (11), while in ox undeveloped and occasionally was missing (6).

The respiratory bronchioles of goat and cat line by simple cuboidal epithelium accompanied with Clara cells, a thin layer of smooth muscle with collagen fibers be noted, this bronchioles splits into several alveolar ducts then into the alveolar sac (12& 13).

Material and method

Histological samples lung were taken from the 6 adult male healthy goats collected from the local slaughterhouses were utilized for the present study cranial, middle, caudal regions of lung lobes (left and right) also because the opening of the common bronchial duct at the conjointly of lower respiratory tract specimens were taken. All those samples were instantly mounted in 10% formalin solution The routine histological process was done like a technique of (14)& (15). The ready sections were stained with the subsequent stains. (Hematoxylin and Eosin stain and special stain (Periodic acid–Schiff & Masson's Trichrome stain).

Results & Discussion

The author of this study described Gases exchanging portion to; Respiratory bronchioles, alveolar duct, Alveoli the Respiratory bronchioles had a wide thin wall and long which

lined by cuboidal epithelial cells that contained few of Clara cell. There was no muscularis mucosa and associated with blood vessels and lead to the alveolar duct (Fig.1,2,3 & 4). The histological examination revealed that Gas exchanging parts of the respiratory system in goat started after terminal bronchiole; respiratory bronchioles, alveolar ducts, alveolar sacs, and alveoli. That was by (3) who observed the same data in adult *Bidri* goat and *Deccani* sheep except for the less wide lumen that opposite with us and accordance employing (3) in sheep and, (5) in goat, (16) in bovine demonstrated little goblet cells in addition to Clara cells, (12&13) have the same opinion of the current result.

The alveolar duct was a straight tube lined by simple squamous epithelium and had numerous out pocketing of alveoli. Their wall made up of collagen and elastic fibers (Fig.2). The alveolar sac was composed of a group of alveoli clusters (Fig.1). Alveoli were thin small air spaces have irregular circular shapes. It was lined with simple squamous epithelium which was composed of two types of simple squamous epithelium (Fig.1, 4 &5).

Type-I pneumocytes were flattened lining cells formed the common lining epithelium of alveoli, it had centrally located nucleus with light cytoplasm. These cells were closely attached to the capillaries (Fig. 4&5).

Type-II pneumocytes they has a dome shape and large with great nuclei which bulged into the lumen of the alveolus and them. Their nuclei were located in the center and these cells were more prominent in the alveolar septum (Fig.4&5). The alveolar duct of the current study lined by simple squamous epithelium which had numerous out pocketing of alveoli, its wall consisted of collagen and elastic fibers, alveoli lined with simple squamous epithelium was of two types of the simple squamous epithelium; type I and II pneumocytes, the first one was flattened of centric nucleus closed to the capillaries, the second was large dome shape of centric great nuclei. This Result was by employing (17&3). While (11) in goat mention that the type I pneumocytes were present without type II. On the other hand, (8) in buffalo and (3) in goat and sheep stated that the alveolar duct line by low cuboidal and simple squamous epithelium accompanied with a little of collagen, smooth muscle, and reticular fibers, the current study didn't have reticular fiber.

The lungs have covered by visceral pleura composed of loose connective tissue with that are covered by mesothelium (Fig. 6). They have consisted of a framework of connective tissue, rich in elastic and collagen fibers which supported the bronchial tree and alveoli in addition to the interlobular connective tissue. The Histochemical results revealed that goblet cells were of positive reaction to Alcian and Periodic Acid-Schiff, this result was following (17)in gazelle, (13) in the cat.

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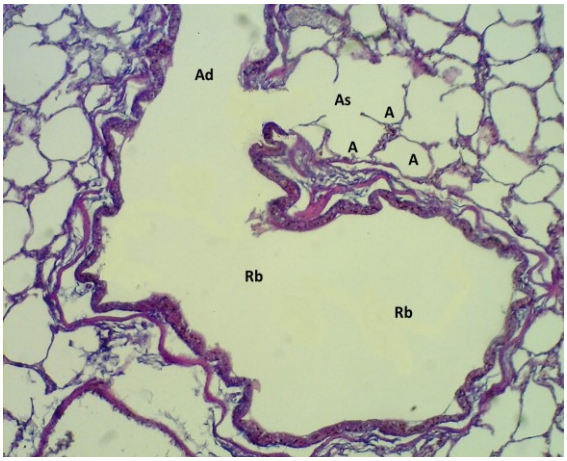

Figure1:Histological section of gas exchanging portion in (goat) shows: Respiratory bronchiole (Rb), alveolar duct (Ad) , alveolar sac (As) & alveoli (A).PAS stain.100x.

Figure 2: Histological section of gas exchanging portion in (goat) shows: respiratory bronchiole (Rb), alveolar duct (Ad) && alveoli (A).PAS stain.400x

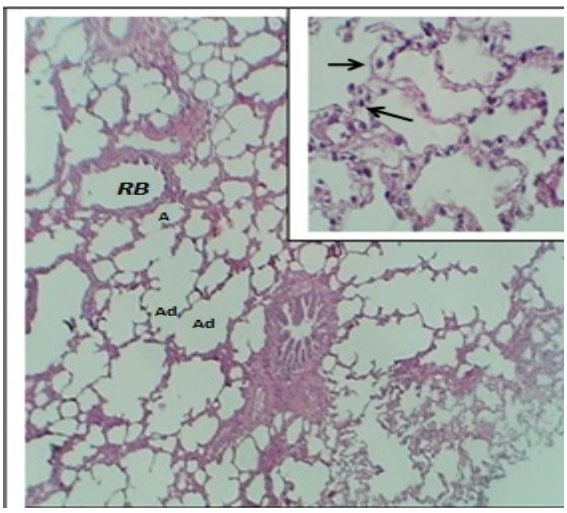

Figure 3: Histological section of gas exchanging portion in (goat) shows: respiratory bronchiole (Rb), alveolar duct (Ad) && alveoli (A).PAS stain.400x.

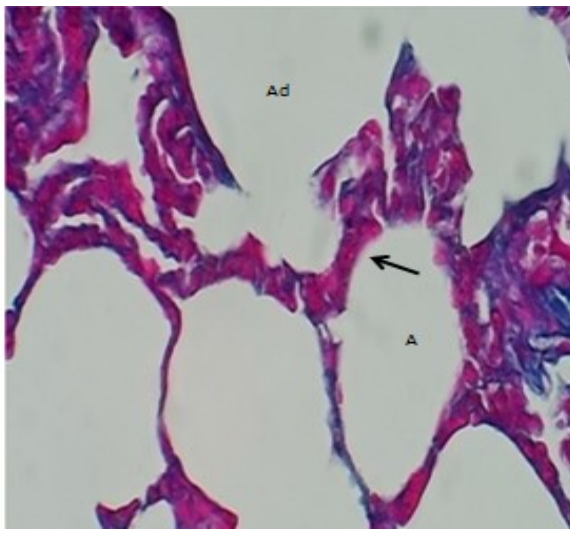

Figure 4 : Histological section of gas exchanging portion in (goat) shows: Alveolar duct (Ad) & alveoli (A) & Type-I .PAS stain.400x.

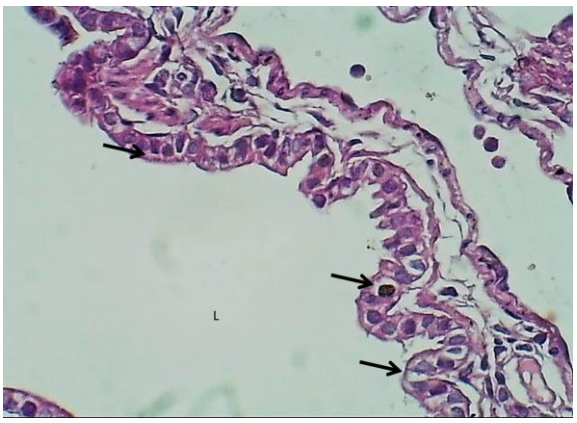

Figure 5: Histological section of respiratory bronchiole in (goat) shows: epithelium (Black arrows)& Type-II. H&E stain. 400x.

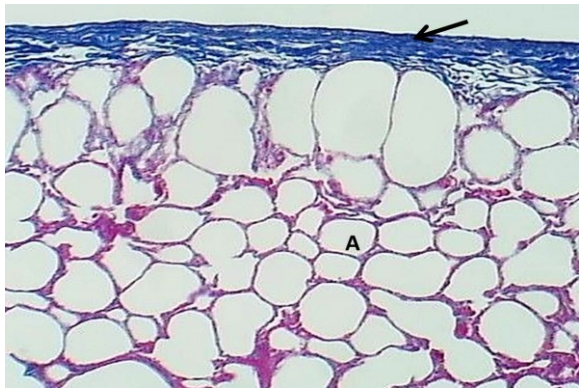

Figure 6: Histological section of lung in (goat) shows: visceral pleura (arrow) and alveolus (A),. Masson's trichrom stain40 X.

Conclusion

The histological features of all domestic animals were equal. demonstrat in this study of respiratory epithelium in the lower part from respirotory in goat is identical to all field animals, in addition to the type I - pnuemocyte and type II-pnuemocyte observated in the pulmonary alveoli are also similar with animals in terms of shape and compositions.

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