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Ahmed Saad Al-A´araji
Department of Anatomy and Histology / College of Veterinary medicine- University of Baghdad, Iraq

Ali Fayadh Bargooth
Wasit University / College of Agriculture, Iraq

Alaa Naji Salah
Wasit University/ College of Veterinary Medicine, Iraq

Correspondence
Ahmed Saad Al-A´araji
Department of Anatomy and Histology / College of Veterinary medicine- University of Baghdad, Iraq

Histological and histometrical characteristics of the vesicular gland in non-breeding rams (*Ovis aris*)

Ahmed Saad Al-A´araji, Ali Fayadh Bargooth and Alaa Naji Salah

Abstract
The present work was carried out to investigate the histological and histometrical structure of the vesicular gland in the ram during non-breeding seasons. Twenty adult rams have brought from Al-kut slaughter house during the period from February to March and July to August 2017. The vesicular gland was compound tubulo alveolar gland divided into lobes and lobules and surrounded with dense connective tissue capsules. The gland had folded mucosa lined by pseudo stratified columnar epithelium rested on thin lamina propria-submucosa, followed by smooth muscle fibers of muscularis and adventitia. The glandular secretory units lined with sample columnar-pseudo stratified columnar epithelium showed little the secretory activities. The histometrical result showed low mean values for the diameter glandular acini, height and the width epithelial cells of acini were 44.23±1.34, 12.26±1.11 and 4.54± 0.92 respectively. Also the diameter of lumen of ducts and the height of epithelial cells were 35.86±1.21 and 10.23±1.33 respectively.

Keywords: Histological, morphometerical, vesicular gland, rams

1. Introduction
In Iraq sheep and goats are consider good acclimatized to subsistence, so these animals need no high specific of food and environments of areas consider well gentled breeds for it [1,2]. The accessory genital glands are differing in different species of animals, it highly correlated to the pelvic urethra, and accessory genital glands are (Prostate gland, bulbourethral glands, ampulla of vas deferens and vesicular gland) [3]. The secretions of the accessory sex glands become seromucous in sometime, nutritive and buffers. The important function of these secretion is add volume for semen, play as lubricants the urethra during ejaculation process, neutralize the low acidity of vagina and it required high favorable condition of motile sperm [4].The seminal vesicular gland is hollow tubular shape gland and it isn't storehouse for the sperms. It is found in all domestic animals, except the cats and dogs [4]. In bovine, ovine, equine, swine and caprine the seminal vesicular gland are very developed. The main duct of the seminal vesicular gland connects with the terminal parts of ducts deference. The seminal vesicular glands locate at the dorsolateral of the neck of urinary bladder [5, 6]. The seminal vesicular glands are pink in color; form in subsistence and the surface have lobulation [7, 8]. The vesicular gland is a compound tubular or tubuloalveolar gland, their secretory units lined by columnar epithelium or pseudo stratified columnar epithelium and there are basal cells between them. The duct system of vesicular gland lined with simple cuboidal epithelium or stratified columnar [9, 10, 11, 12]. the lamina propria –submucosa formed from loose connective tissue which connect with the trabeculi which is divided the organs into lobes and lobules, the tunica muscular is represent arrangement of smooth muscles in varying width and followed by tunica serosa [13, 14]. The aim of this study was to investigate the changes that occur in glandular parenchyma during non-breading seasons.

2. Materials and Methods
The vesicular glands of 20 adults' male indigenous rams were collected from Al Kut slaughterhouse in Wasit governorate during non-breeding season, the collected gland were allocated into two groups involved two periods, the first group was collected during February to March and the second group was collected during July to August 2017.

Specimens of vesicular glands were fixed with 10%, after fixation the specimens have processed for paraffin technique, and sectioned at 5-7µm, then tissue sections have stained with Hematoxyline & Eosin stain [15]. The histological parameters involved the thickness of glandular capsule, diameters of secretory unites, heights and widths of epithelium cells of secretory unites, diameters of lumen and heights of epithelium cells of duct were measured [16].

2.1 Statistical Analysis
The estimated data were analyzed by using SPSS (version 24). All numerical results have expressed as the Mean ± Standard error. For comparisons, the statistical significance has assessed by ANOVA. The significance level has set at $p<0.05$ [17].

3. Results and Discussion
The results showed that the seminal vesicular gland was compound tubuloalveolar type and enclosed by capsule composed of irregular dense connective tissue with few smooth muscles fibers (Fig. 1). This result in agreement with results of [9, 11, 12, 14, 18]. Thickness of capsule of vesicular gland was about 43.12±3.22µm, this result was nearly similar to the thickness of capsule of prostate gland in prepubertal Gaddi Goat which studied by Dellmann and Eurell, [19]. The present study showed that the vesicular gland has divided into lobes and lobules by trabecular capsule, the glandular parenchyma composed of tunica mucosa, submucosa, muscularis and adventia. The mucosa has thrown into anastomosing mucosal folds (Fig. 2), this finding were similar to that describe by [18, 20, 21, 22]. The lamina propria – submucosa was highly vascularized loose connective tissue (Fig. 1). The tunica muscularis composed of smooth muscles fibers which enclosed by tunica adventitia (Fig. 2), the present observation was similar to [24] in the vesicular gland of breed sheep and [25] in the vesicular gland of the Black Bengal buck. In present observation, the secretory unites of vesicular gland were lined by simple columnar epithelium to pseudo stratified columnar epithelium contained basal cells which had ovoid nuclei with eosinophilic cytoplasm. There were myoepithelial cells (flattened cells) spread between the glandular alveoli, these cells contributed in excretion of the alveolar secretion. The duct system lined with simple cuboidal epithelium cells with central rounded nuclei (Fig. 4, 5, 6), the observation is agreement with earlier authors as [26, 27, 24]. It can be reasoned that the simple columnar were the chief secretory cells, while the basal cells were basal reserve cells, many authors as [20, 23] are point for this fact in different domestic animals. The result revealed that the secretion of seminal vesicular gland was very little in the lumen of alveoli and ducts (Fig. 7). The histometrical measurements of the vesicle gland showed that the diameter glandular acini, height and the width epithelial cells of acini were 44.23±1.34, 12.26±1.11 and 4.54± 0.92 respectively. The diameter of lumen of ducts and the height epithelial cells of it were 35.86±1.21 and 10.23±1.33, respectively. This measurements are less than measurement that mentioned by [25] on the vesicle gland of the Black Bengal buck. This result suggests that this decreased was associated with the serum- testosterone concentration during non-breeding season consequently lead to decrease in the activities of the secretory unites. This fact is corroborate with the [28] who referred to the secretory capacity of accessory sex gland which has high relationship with the testosterone in blood, there are many authors had similarity to this fact as [29] in bull, [30] in goat and [31] in Black Bengal goat. On the other hand the [32] mentioned that the testosterone secretion increase with the activity of gonads which influence with the pituitary hormones, the action of pituitary gland activity with puberty and breeding season. There for, this fact explain the depressing of the height and width of the epithelium cells of secretory unites which is covenant with opinion of [13] who mentions that the height of the epithelial cells of the seminal vesicles and the degree of activity of the secretory processes are dependent on testosterone levels.

4. Conclusions
The present study concluded that during non- breeding seasons there was marked decline in the value of histometrical measurements of the some histological structures of vesicle gland caused very little secretion found in the lumen of its alveoli and ducts. The great decrease in the secretion of the secretory unites of the seminal vesicles during non-breeding season could be because of the level of the blood-testosterone concentration which in turn was affected by the activity of gonads.

5. Acknowledgement
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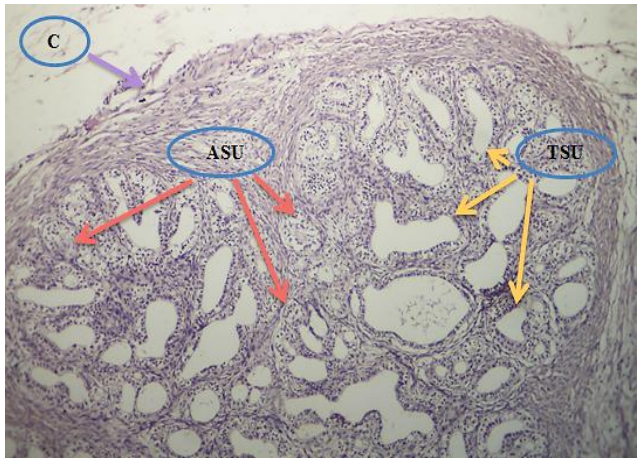

Fig 1: Photomicrograph of the vesicular gland in non-breeding season in sheep, shows: Capsule (C), tubular secretory unite (TSU) and alveolar secretory unite (ASU) (H&E 10X)

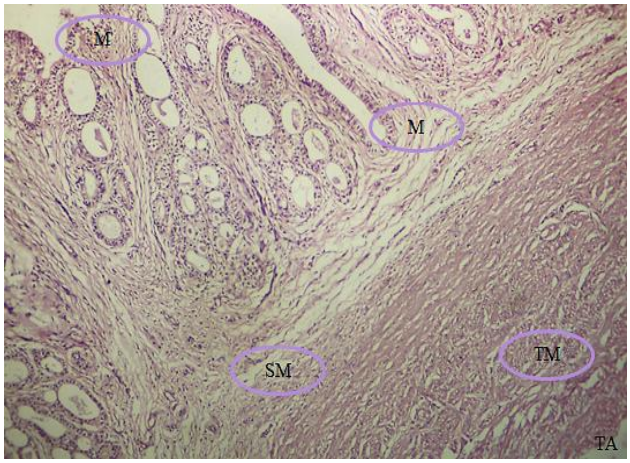

Fig 2: Photomicrograph of the vesicular gland in non-breeding season in sheep, showing Mucosa(M), Sub mucosa (SM),Tunica Muscularis (TM) and Tunica Adventitia (TA) (H&E 10X)

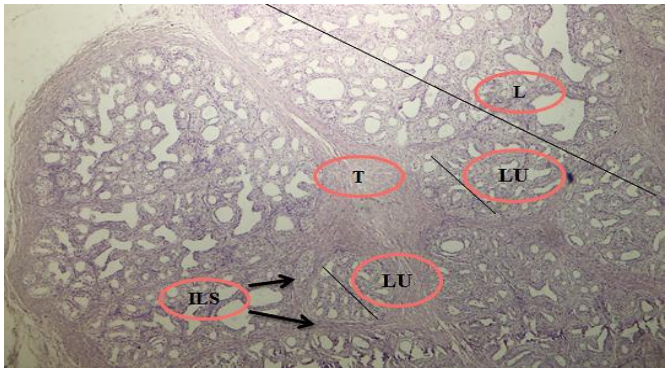

Fig 3: Photomicrograph of the vesicular gland in non-breeding season in sheep, shows Lobes (L), Lobules (LU), Trabiculae (T) and Inter lobular septa (ILS) (H&E 4X).

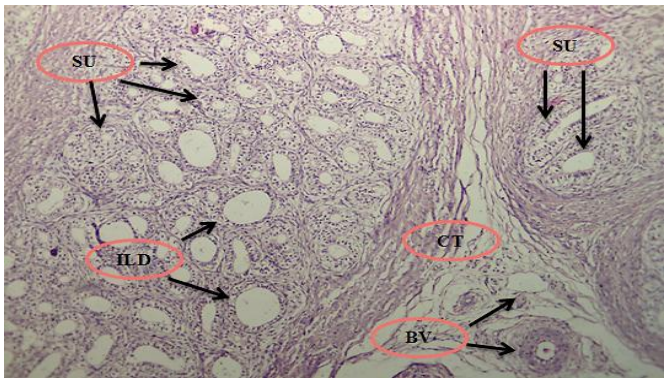

Fig 4: Photomicrograph of the vesicular gland in non-breeding season in sheep, shows connective tissue (CT)(L), blood vessels (BV), secretory units (SU), intra lobar duct (ILD) & (H&E 10X)

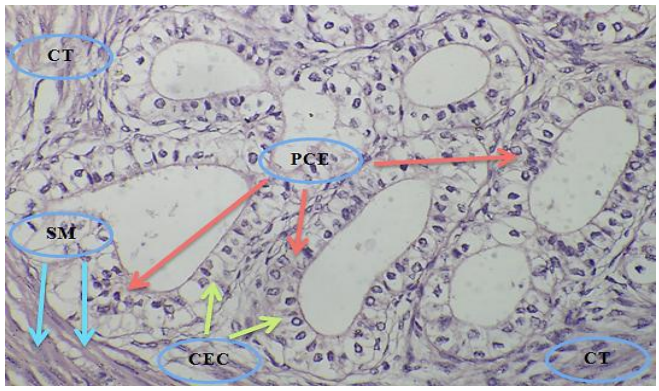

Fig 5: Photomicrograph of the vesicular gland in non-breeding season in sheep, showing columnar Epithelium Cells (CEC) and pseudo stratified columnar epithelium cell (PCE) of secretory unites, smooth muscles (SM) and connective tissue (CT) (H&E 40X).

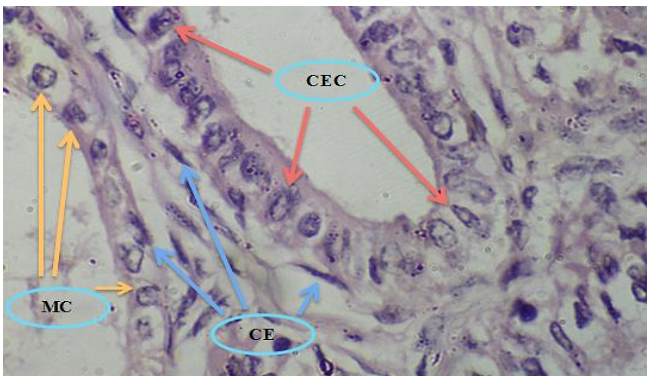

Fig 6: Photomicrograph of the vesicular gland in non-breeding season in sheep, shows: columnar epithelium cells (CEC) of secretory unites, cuboidal epithelium cells (CE) of duct and myoepithelial cells (MC) (H&E 100X).

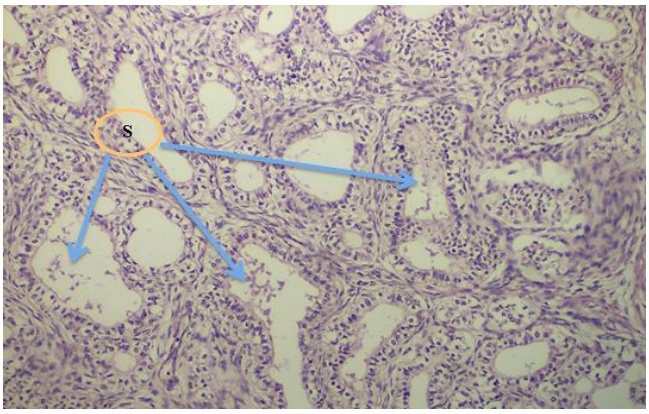

Fig 7: Photomicrograph of the vesicular gland in non-breeding season in sheep, shows little amount of secretion (S) in the lumen of secretory unites and ducts (H&E 20X).

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