

**POSTNATAL HISTOLOGICAL DEVELOPMENT OF THE
MALE REPRODUCTIVE ORGANS IN BARKI SHEEP.
(b) HISTOLOGICAL DEVELOPMENT OF MALE
ACCESSORY GLANDS**

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SUMMARY

This study was carried out at Maryout Research Station which belongs to the Desert Research Center located 30 km south west of Alexandria. Twenty seven pure barki ram lambs, one month old, were used to study postnatal development of accessory sex glands. Three lambs were sacrificed at one, three, six, eight, ten, twelve, fourteen, sixteen and eighteen months of age.

Histological examination showed that, animal age had a significant influence on the largest and the smallest diameter of ampullary crypts, height of epithelial lining it, thickness of fibrosa and height of epithelium lining its duct. Age of ram influenced seminal vesicles acini and prostatic acini significantly ($P<0.01$). Cowper's gland capsules and ducts were significantly affected by animal age ($P<0.05$).

Keywords: *Postnatal, development, histology, ampullae, seminal vesicle, prostate, cowpers gland, farm animals, sheep*

INTRODUCTION

High reproductive performance is a key factor that success of farm animal productivity which depends on, other factors such as male fertility specially when limited mating season is practiced. Physiological, anatomical and histological development of male reproductive organs is important particularly, when planning the management systems and importance of using rams in sheep flocks.

Sexual development and attainment of puberty in ram lambs that appear by the completion of spermatogenesis, marked by the release of spermatozoa, is preceded by steady rise in the level of androgen secretion and enhanced development of accessory glands Watson *et al.* (1956); Skinner *et al.* (1968); Colyer, (1977); Dyrmondsson and Less (1972b) and Resko *et al.* (1999).

There are rare studies about histological development of male sheep accessory sex glands.

The aim of the present work was to study the postnatal histological developmental changes of the male accessory sex glands in Barki Sheep.

MATERIALS AND METHODS

This experiment was carried out at Maryout Research Station (Desert Research Center).

Twenty seven pure Barki male lambs one month old were used. After birth lambs were left to suckle their dams freely up to the time of weaning at three months of age.

The lambs started from the second week of age to pick berseem. Concentrate ration was offered to the animals twice daily at 8 a.m. and 3 pm. This concentrate mixture contained 15% crude protein and 14.5% crude fibers. The animals were allowed to drink after 1-2 hours of feeding.

Nine groups each of three animals, were slaughtered successively at 1, 3, 6, 8, 10, 12, 14, 16 and 18 months of age.

Each animal was weighed and the testicle descent was examined before being sacrificed. Genital organs under study included accessory glands were removed immediately after slaughter.

Fresh samples were taken immediately for histological study from ampullae, seminal vesicles, pars-disseminate of prostat and bulbo-urethral glands. In paired glands the samples were taken once from the right lobe and another from left lobe respectively. The samples were fixed in 10% formalin, dehydrated in ascending grades of ethyle alcohol, cleared in xylen, saturated by soft paraffin wax (M.P. 50°C) and sectioned at 4-5 μ thickness using a rotary microtome then stained with haematoxylin and easion. Several histological observations were recorded using a research light microscope and Carl Zeiss ocular micrometer as follows:

1. The ampullae glands:

Largest and smallest thicknesses of mucosa, thickness of muscular layer, thicknesses of fibrosa and diameters of lumen of the duct.

Height and type of the epithelium lining the mucosal flods and secretory tubules (crypts) of the gland.

Largest and smallest diameters of ten crypts at random.

2. The seminal vesicles:

Largest and smallest diameters of ten crypts (secretory tubules) at random, thicknesses of muscular layer and thicknesses of fibrosa.

Height and type of epithelium lining the crypts.

3. Pars-disseminate prostate:

Ten prostatic acini were examined at random from each slide to study.

Largest and smallest diameters of their acini and prostatic ducts.

Height and type of lining the acini and lining duct.

Ten alveoli were studied at random from one lobe to determine.

Largest and smallest diameter of the alveoli, largest and smallest diameter of the duct and largest and smallest thicknesses of skeletal muscle coat.

Height and type of epithelium lining the alveoli and the duct.

Statistical Analysis

Statistical analysis of the different measurements obtained was performed according to SAS (1989).

Statistical analysis included analysis of variance. One way classification, Duncan's Multiple Range test, and correlation coefficient.

RESULTS AND DISCUSSION

Effect of age on histological changes of the male accessory glands in Barki lambs:

1. Ampulla:

The present study revealed that the two ampulla glands were branched, tubular structures with saclike dilations, and were lined with a simple cuboidal epithelium. The wall of the ampulla consisted of three coats: an outer fibrosa which is composed of connective tissue with blood vessels and bundles of smooth muscle fibers scattered among this tissue; a middle musculosa which is composed of longitudinal and mixed longitudinal and circular smooth muscle fibers; and an inner mucosa which had numerous thin irregularly branching folds forming crypts (Plates 1 through 3).

Mean values of histological parameters of ampulla during successive ages in growing Barki ram lambs are presented in (Table 1).

Although there was a gradual increase in the largest thickness of mucosa with advancement of age, but there were no significant differences among all age groups.

The present results (Table 1) indicated that the largest thickness of mucosa of the ampulla ranged between 629.0 and 1304.7 μ while the smallest thickness ranged between 244.7 and 562.7 μ . In buffalo bulls, Abdel-Baky, (1993) found that largest thickness of mucosa ranged from 1201.1 to 1578.1 μ , while the smallest thickness ranged from 722.5 to 852.4 μ . It is apparent that the present values for largest and smallest thicknesses of mucosa are lower than that reported by the above mentioned author, these variations may be due to species differences.

Present results (Table 1) indicate that the largest width of the lumen of the ampulla ranged from 842.3 to 1386.3 μ , while the smallest width ranged from 56.7 to 225.7 μ . Abdel-Baky, (1993) found that the largest diameter of the lumen of the ampulla ranged between 160.4.3 and 704.2 μ while the smallest diameter ranged between 84.8 and 143.1 μ in buffalo bulls. It is apparent that the present values for the largest and smallest diameters of the ampulla lumen were very close to that reported by this author.

Present results (Table 1) indicated that the largest thickness of muscle layer of ampulla ranged between 424.7 and 1184.0 μ , while the smallest thickness ranged between 261.3 and 662.0 μ . Abdel-Baky, (1993) in buffalo found that largest thickness of muscle layer of the ampulla ranged between 1103.4 and 1408.3 μ , while

Table 1. Least square means \pm SE for some histological parameters of ampulla during successive ages in growing Barki ram lambs

Parameters	Age (month)								SE	
	3	6	8	10	12	14	16	18		
Fibrosa (μ)	L.T	640.7 ^{BC}	658.7 ^{BC}	1031.7 ^{AB}	659.0 ^{BC}	888.3 ^{ABC}	1110.7 ^A	817.3 ^{ABC}	587.7 ^C	115.6
	S.T	237.3 ^{ABC}	154.0 ^C	335.0 ^A	197.5 ^{BC}	312.0 ^{AB}	304.0 ^{AB}	248.7 ^{ABC}	267.3 ^{ABC}	33.4
Muscle layer (μ)	L.T	424.7 ^D	551.7 ^{CD}	787.0 ^{CB}	907.0 ^B	916.7 ^B	1184.0 ^A	576.7 ^{CD}	621.3 ^{CD}	77.2
	S.T	261.3 ^D	375.7 ^{CD}	499.0 ^{BC}	547.3 ^{AB}	535.3 ^{AB}	662.0 ^A	396.0 ^C	417.0 ^{BC}	42.4
Mucosa (μ)	L.T	629.0	792.7	982.0	1162.0	862.4	1078.3	1304.7	972.7	215.3
	S.T	244.7 ^B	409.7 ^{AB}	246.3 ^B	439.0 ^{AB}	317.7 ^{AB}	562.7 ^A	524.3 ^A	390.0 ^{AB}	81.0
Lumen (μ)	L.W	1008.3	1209.3	1377.7	1386.3	1118.3	842.3	1230.0	933.0	245.6
	S.W	92.7	56.7	192.0	94.0	102.3	145.0	144.3	225.7	51.1
H. Epithelium (μ)	L.W	23.67 ^B	30.00 ^A	22.00 ^B	23.00 ^B	24.00 ^B	23.67 ^B	23.67 ^B	23.67 ^B	1.34
	S.W	95.45 ^D	116.73 ^{CD}	112.43 ^{CD}	126.33 ^C	164.37 ^B	193.67 ^A	159.10 ^A	189.20 ^A	7.69
Crypts	L.D	54.41 ^C	81.23 ^B	66.20 ^C	80.77 ^B	110.93 ^A	110.13 ^A	110.90 ^A	119.23 ^A	4.35
	S.D	19.68 ^{BC}	26.17 ^A	18.87 ^{BC}	16.57 ^{DE}	15.80 ^E	20.37 ^B	18.00 ^{CD}	19.00 ^{BC}	0.66

- Within each row, means bearing the same letter do not differ significantly from each other, otherwise they differ significantly at ($P < 0.05$)

- L.T. = Largest thickness.

- S.T. = Smallest thickness.

- H. = Height of.

- L.W. = Largest width.

- S.W. = Smallest width.

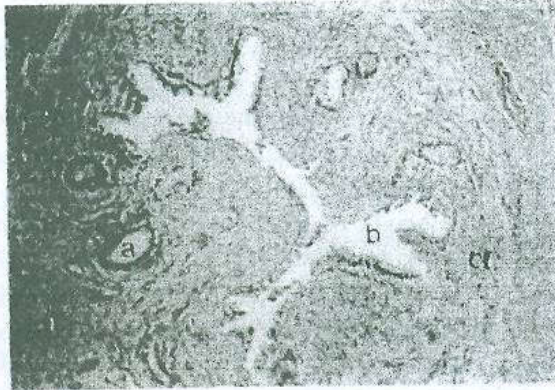


Plate 1: Cross-section in ampulla of 3 months Barki ram lamb (x 120)
a: Crypt b: Lumen

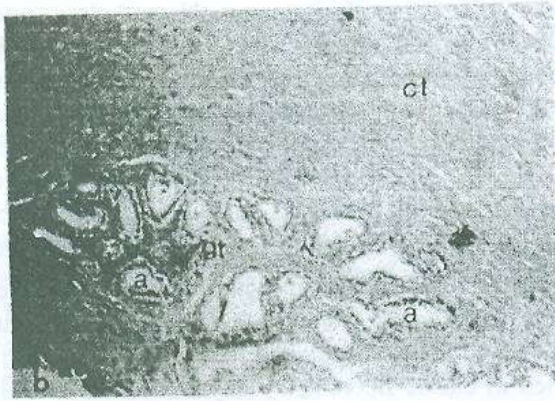


Plate 2: Cross-section in ampulla of 8 months Barki ram lamb (x 120)

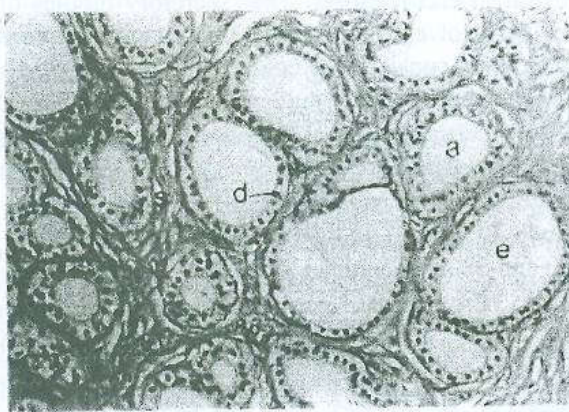


Plate 3: Cross-section in ampulla of 10 months Barki ram lamb (x 120)
a: Crypts d: Cuboidal epithelium
e: Secretions s: Septa

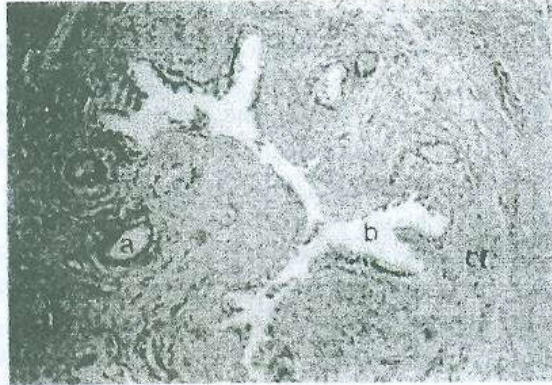


Plate 1: Cross-section in ampulla of 3 months Barki ram lamb (x 120)
a: Crypt b: Lumen

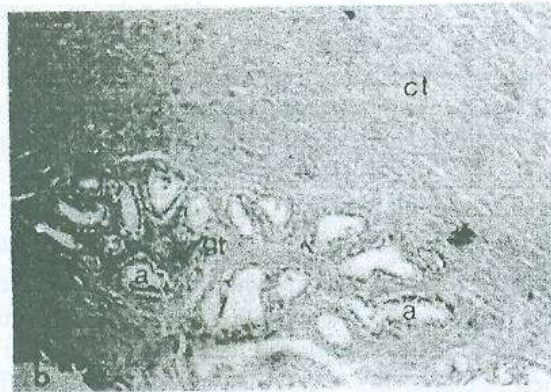


Plate 2: Cross-section in ampulla of 8 months Barki ram lamb (x 120)

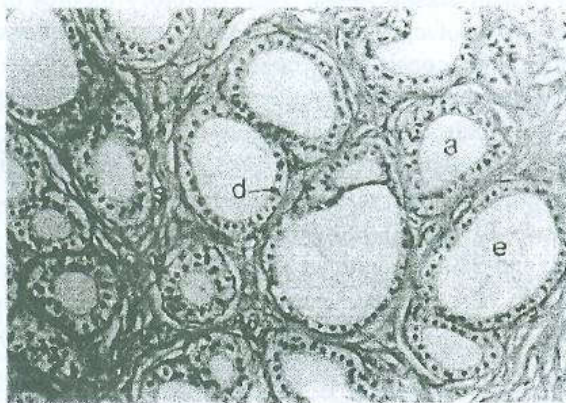


Plate 3: Cross-section in ampulla of 10 months Barki ram lamb (x 120)
a: Crypts d: Cuboidal epithelium
e: Secretions s: Septa

the smallest thickness ranged between 733.9 and 903.9 μ . It is apparent that present estimates for the largest and smallest thicknesses of muscle layer of the ampulla were very lower than that reported by the previous author. These variations may be due to species differences.

Present results (Table 1) revealed that the largest thickness of fibrosa ranged between 587.7 and 1110.7 μ , while the smallest thickness ranged between 154.0 and 335.0 μ .

In the present study the height of epithelium lining crypts of ampulla ranged between 15.80 and 26.17 μ with an average of 21.0 μ . Kamar, (1975) observed that, the height of epithelial cells averaged 22.91 μ in buffalo bulls. Eissa, (1980) found that the height of epithelial cells lining the crypts in buffalo bulls ranged between 19.55 and 23.99 μ with an average of 22.34 μ .

The present results indicated that age of ram lambs was without significant influence on the largest and the smallest thicknesses of mucosa and largest and smallest diameters of the ampullary lumen. Nevertheless, age of lambs had a significant ($P < 0.05$) influence on largest and smallest thickness of fibrosa and height of epithelium lining the ampullary duct. On the other hand, animal's age had a significant ($P < 0.01$) influence on largest and smallest thicknesses of muscle layer and on largest and smallest diameters of ampullary crypts and height of epithelial lining the crypts. Eissa, (1980) in buffalo bulls found that age of animals was without significant influence on the height of epithelium lining the crypts of ampulla.

2. Seminal veicels:

The seminal vesicle glands of the growing lambs were of the compound tubulo alveolar type. Each gland was surrounded by fibro-elastic capsule. The gland was divided into lobules by thick trabeculae derived from the capsule (Plate 4). These trabeculae were rich in elastic fibers and many smooth muscle fibers. Thin bundles of connective tissue with few individual smooth muscle fibers were seen surrounding the alveoli (Plates 5-7). The alveoli were collected together in groups, each being surrounded by thin bundles of smooth muscle which were intermingled with connective tissue rich in elastic fibers. The secretory tubules of seminal vesicles were lined by two layers of epithelial cells. The outer layer consisted of cuboidal cells, while the inner layer consisted of columnar cells with brush border (Plates, 6 and 7). Trotter, (1959) mentioned that the epithelium seminal vesicles was primarily high columnar cells, which appeared as pseudostratified in mature active gland in bovin males. Mean histological parameters of seminal vesicle during successive ages of Barki ram lambs are presented in (Table 2).

The present study (Table 2) indicates that largest thickness of muscle layer ranged from 181.00 and 520.00 μ with an average of 346.6 μ , while smallest thickness ranged from 78.7 to 153.0 μ with an average of 103.6 μ . In mature buffalo bulls, Zaki, (1971) found that the thickness of muscle layer ranged from 66.0 to 440 μ with an average of 149.0 μ .

The average largest thickness of fibrosa ranged between 369.33 μ at one month of age and 556.00 μ at 6 months of age. While, the average smallest thickness of fibrosa ranged between 82.67 μ at 12 months of age and 138.67 μ at 18 months of age (Table 2).

Table 2. Least square means \pm SE for some histological parameters of seminal vesicles during successive ages in growing Barki ram lambs

Parameters	Age (month)										SE
	1	3	6	8	10	12	14	16	18		
Muscle layer (μ)	L.T	246.67 ^{BC}	181.00 ^C	298.67 ^{BC}	313.33 ^B	332.00 ^{BC}	398.67 ^{AB}	520.00 ^A	438.00 ^{AB}	291.33 ^{BC}	44.36
	S.T	78.67	88.00	95.33	153.00	92.33	118.67	99.67	112.00	94.67	16.77
Fibrosa (μ)	L.T	369.33	427.33	455.67	400.00	488.67	522.67	506.67	556.00	400.00	58.07
	S.T	83.00 ^C	96.33 ^{BC}	123.33 ^{AB}	109.33 ^{ABC}	103.00 ^{ABC}	82.67 ^C	132.67 ^{AB}	131.33 ^{AB}	138.67 ^A	11.90
Acini diameter (μ)	L.D	96.23 ^D	77.97 ^E	103.30 ^D	98.73 ^D	124.00 ^{BC}	134.57 ^{AB}	147.53 ^A	107.57 ^{CD}	144.47 ^A	6.46
	S.D	71.57 ^{DE}	59.00 ^F	64.83 ^{EF}	65.33 ^{EF}	81.10 ^{CD}	85.27 ^{BC}	100.13 ^A	73.93 ^{CDE}	95.77 ^{AB}	3.93
H. of epithelium (μ)		18.07 ^{AB}	16.97 ^B	18.50 ^A	15.57 ^C	14.07 ^D	17.07 ^B	17.07 ^B	13.03 ^P	14.10 ^P	0.45

- Within each row, means bearing the same letter do not differ significantly from each other, otherwise they differ significantly at ($P < 0.05$)

- L.T. = Largest thickness.

- S.T. = Smallest thickness.

- L.D. = Largest diameter.

- S.D. = Smallest diameter.



Plate 4: Cross-section in seminal vesicles of one month Barkeer lambs (x 120)
a: Lobe b: Lobule

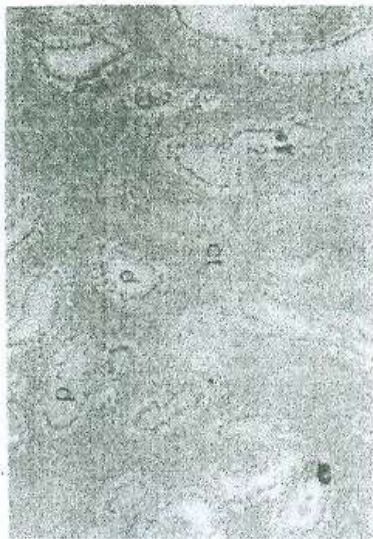


Plate 5: Cross-section in seminal vesicles of 3 months Barkeer lambs (x 270)
c: Connective tissue d: Alveoli

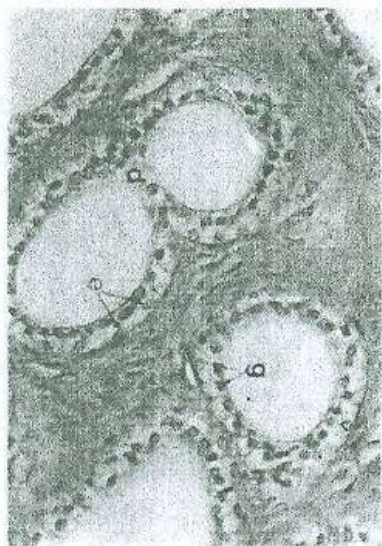


Plate 4: Cross-section in seminal vesicles of 10 months Barkeer lambs (x 270)
d: Alveoli e: Basal nuclei g: Apical nuclei



Plate 7: Cross-section in seminal vesicles of 14 months Barkeer lambs (x 270)
b: Brush border s: Secretion

The present study indicates that age of ram lambs exerted a significant ($P < 0.01$) influence on the largest thickness of muscle layer. However the influence of age on the smallest thickness of muscle layer was not significant. On the other hand, age of lambs was without significant effect on the largest thickness of fibrosa, while it had a significant ($P < 0.05$) influence on the smallest thickness of fibrosa.

Table (2) reveals that the largest diameter of acini ranged between 77.97 and 147.53μ with an average of 114.93μ , while the smallest diameter ranged between 59.00 and 100.13μ with an average of 77.44μ . In mature buffalo bulls, Zaki, (1971) found, in buffaloes that the largest diameter of acini ranged from 121.5 to 392.0μ with an average of 237.9μ , while the smallest diameter ranged from 80.0 to 237.6μ with an average of 134.7μ . It is apparent that present values are very lower than that reported by the previous author. These variations may be due to species difference.

The secretory acini of seminal vesicles were lined by pseudostratified columnar epithelium (Plat 6). The height of epithelium lining the acini ranged from 18.50μ at 6 months of age to 13.03μ at 16 months of age. Skinner *et al.* (1968) found the height of epithelium lining the secretory acini ranged from 27.0μ at birth to 19.0μ at 168 days (5.5 month) of age in suffolk ram lambs. Macmillan and Hafs (1969) found that, the height of lining epithelium was 23.6 at birth and 30.5 at 9 months in Holstein bulls. Mansoor *et al.* (1988) reported that, the average height of glandular epithelium of seminal vesicle was 18.0μ in buffalo males.

The present study indicates that age of ram lambs had a significant ($P < 0.01$) influence on the largest and smallest diameters of the acini and the height of epithelium lining these acini. It was appeared that largest and smallest diameters of the acini of seminal vesicles increased with advancement of age, while height of epithelium lining these acini decreased with advancement of age.

Histological structure of the seminal vesicles of the lambs was changed with age. When animals approached puberty at 12 months of age, the secretory units or acini were enlarged in size and the ratio between the secretory tissue to the connective tissue was increased (Plates 5 through 7).

3. Pars disseminat prostate:

The pars disseminate prostate was composed of many tubulo alveolar glands that empty their secretions by numerous ducts into the dorsal wall of the lumen of pelvic urethra. The secretory portions of the gland were round, oval or irregular in shape (Plates 9, 10 and 11). The glandular epithelium was low columnar in the immature lambs and cubical in the glands of mature animals. The nuclei of the glandular epithelium were approximately at the same level in the basal half of the cells. The epithelial cells lay upon a layer of connective tissue which contained blood capillaries and elastic fibers. The striated urethral muscle surrounded the disseminated portion of the prostate. The muscular septa extended in towards the urethra through the prostate gland (Plates 8 through 11).

Mean histological parameters of pars disseminate prostate in the successive ages of Barki ram lambs are presented in (Table 3).

Present results (Table 3) indicates that the largest diameter of prostatic duct ranged between 147.3μ at 6 months and 651.0μ at 14 months of age with an average

Table 3. Least square means \pm SE for some histological parameters of pars disseminate prostate in successive ages in growing Barki ram lambs

Parameters	Age (month)										SE
	1	3	6	8	10	12	14	16	18		
Prostatic duct (μ)	L.D	174.7 ^B	181.3 ^B	147.3 ^B	377.7 ^{AB}	586.7 ^A	567.7 ^A	651.3 ^A	636.0 ^A	391.7 ^{AB}	108.88
	S.D	77.00	102.67	85.33	150.33	189.33	156.00	179.33	243.00	142.00	49.89
H. of epithelium (μ)	L.D	32.00	32.33	25.00	35.33	34.00	38.67	42.67	33.67	35.00	4.06
	S.D	65.80 ^P	69.60 ^{CD}	79.67 ^{BCD}	70.60 ^{CD}	66.20 ^D	100.87 ^A	88.07 ^{ABC}	88.60 ^{ABC}	99.13 ^{AB}	6.68
Acini diameter (μ)	L.D	34.93 ^{CD}	32.47 ^D	42.60 ^{BCD}	46.40 ^{AB}	36.07 ^{CD}	53.33 ^A	42.27 ^{BCD}	42.87 ^{BC}	51.80 ^{AB}	3.27
	S.D	11.33 ^{BCD}	10.87 ^D	12.33 ^{ABC}	13.60 ^A	12.13 ^{BCD}	12.40 ^{ABC}	12.67 ^{AB}	11.27 ^{CD}	12.07 ^{BCD}	0.42

- Within each row, means bearing the same letter do not differ significantly from each other, otherwise they differ significantly at ($P < 0.05$)

- L.D. = Largest diameter

- S.D. = Smallest diameter

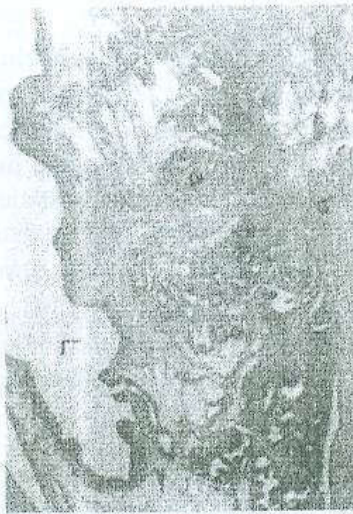


Plate 8: Cross-section in pars disseminate prostatic of one month Baraki ram lamb (x 46)
a: Glandular tissue b: Connective tissue
L: Lumen of pelvic urethra



Plate 9: Cross-section in pars disseminate prostatic of 16 months Baraki ram lamb (x 480)
c: Acini d: Low columnar epithelium

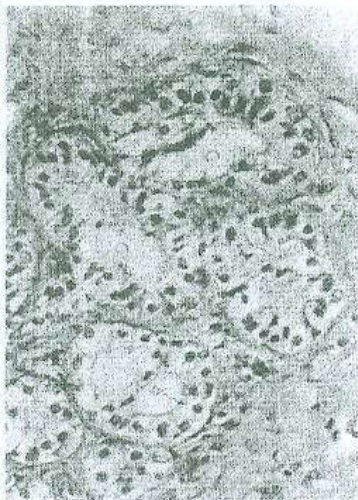


Plate 10: Cross-section in pars disseminate prostatic of 6 months Baraki ram lamb (x 270)
c: Acini d: Low columnar epithelium



Plate 11: Cross-section in pars disseminate prostatic of 16 months Baraki ram lamb (x 270)
b: Connective tissue e: Cuboidal epithelium

of 412.70 μ , while the smallest diameter ranged between 77.00 μ at one month and 243.00 μ at 14 months of age with an average of 147.22 μ . In buffalo bulls, Abdel-Baky, (1993) found that the largest diameter of the prostatic duct ranged from 249.5 to 305.0 μ with an average of 275.6 μ , while, the smallest diameter ranged from 119.3 to 155.5 with an average of 137.2 μ . It was appeared that present estimate for the largest diameter of the prostatic duct was higher than that reported by Abdel-Baky, (1993), while the smallest diameter was very close to that reported by the same author.

The average of height of epithelium lining the prostatic duct ranged between 25.00 μ at 6 months and 42.67 μ at 14 months of age.

Age of ram lambs exerted a significant ($P < 0.01$) influence on the largest diameter of the prostatic duct. However, the influence of age on the smallest diameter and height of epithelium lining the prostatic duct was not significant.

Table (3) indicates that, largest diameter of prostatic acini ranged from 65.80 to 100.87 μ with an average of 80.92 μ , while the smallest diameter ranged from 32.47 to 53.33 μ with an average of 42.53 μ .

The age had a significant ($P < 0.01$) influence on largest and the smallest diameters of epithelium lining these prostate acini.

4. Bulbo Urethral (Cowper's) Gland:

The Cowper's gland is of tubulo-alveolar type. The gland is surrounded by skeletal muscle capsule which consisted of dense white fibrous connective tissue. Striated muscle from the bulbocavernosus muscle is associated with capsule. The capsular connective tissue is continuous as septal components of the lamina propria sub-mucosa, which extend into the gland to form the supporting structure dividing the gland into lobules (plates 12 and 13). These septa contained smooth muscle fibers. The lining cells of the glandular tissue are pyramidal, and the nuclei are large in size, flattened in shape and basally in position (plates 12 and 13).

Mean histological parameters of cowper's gland in successive ages of Barki ram lambs are presented in (Table 4).

Table (4) shows that the largest thickness of Cowper's gland capsule ranged from 652.7 to 1218.3 μ with an average of 960.6 μ , while the smallest thickness ranged from 185.3 to 323.0 μ with an average of 283.6 μ . Abdel Baky, (1993) found that the largest thickness of Cowper's capsule ranged between 758.1 and 1187.0 μ with an average of 879.0 μ , while the smallest thickness ranged between 340.3 and 501.6 μ with an average of 434.5 μ in buffalo bulls. it was appeared that present estimate for the largest thickness of cowper's capsule was larger than that reported by Abdel-Baky, (1993), while smallest thickness was lower than that reported by the same author.

The ducts' system of Cowper's gland was lined by columnar epithelial cells. present results reveal that, largest diameter of Cowpers ducts ranged between 241.0 and 526.7 μ with an average of 364.1 μ , while the smallest diameter ranged between 93.7 and 270.7 μ werage of 166.4 μ . Although there was an increase in the height of epithelium lining the duct with advancement of age, but the differences among 6, 8

Table 4. Least square means \pm SE for some histological parameters of bulbo-successive ages growing Barki ram lambs

Parameters	Age (month)										SE
	1	3	6	8	10	12	14	16	18	18	
Skeletal M. capsule (μ)	L.T	749.3 ^{BC}	652.7 ^C	810.0 ^{ABC}	1027.3 ^{ABC}	790.7 ^{ABC}	1078.3 ^{AB}	1180.0 ^A	1218.3 ^A	1138.3 ^{AB}	128.01
	S.T	323.00	263.67	376.33	237.67	299.67	268.00	291.00	307.33	185.33	51.61
Duct Diameter (μ)	L.D	526.7	270.0	336.7	385.0	373.7	241.0	348.3	419.3	376.7	85.63
	S.D	123.0 ^{BC}	143.3 ^{BC}	93.7 ^C	140.3 ^{BC}	198.7 ^{ABC}	126.7 ^{BC}	221.3 ^{AB}	270.7 ^A	180.3 ^{ABC}	36.73
H. Epith. Lining the duct (μ)		10.67 ^{DE}	8.67 ^E	12.33 ^{CD}	14.33 ^{BC}	15.00 ^{BC}	16.67 ^{AB}	18.67 ^A	15.67 ^{AB}	17.33 ^{AB}	0.97
		53.53 ^D	45.93 ^E	53.20 ^D	60.70 ^C	61.57 ^C	59.70 ^{CD}	72.13 ^A	64.33 ^{BC}	69.83 ^{Ab}	2.44
Alveoli diameter (μ)	L.D	35.57 ^E	34.20 ^E	37.33 ^{DE}	41.73 ^{CD}	46.07 ^{ABC}	44.55 ^{BC}	49.93 ^A	46.73 ^{AB}	48.83 ^{AB}	1.62
	S.D	14.63 ^B	14.50 ^{BC}	13.47 ^C	14.40 ^{BC}	15.43 ^B	15.53 ^B	16.87 ^A	15.13 ^B	14.93 ^B	0.36

- Within each row, means bearing the same letter do not differ significantly from each other, otherwise they differ significantly at ($P < 0.05$)

- L.T. = Largest thickness.

- S.T. = Smallest thickness.

- M. = Muscle.

- L.D. = Largest diameter.

- S.D. = Smallest diameter.

- H. epith. = Height of epithelium.

and 10 months and among 12, 14, 16 and 18 months of age were not statistically significant.

However, the difference between one month of age and the other age groups except 3 and 6 months were statistically significant ($P < 0.05$).

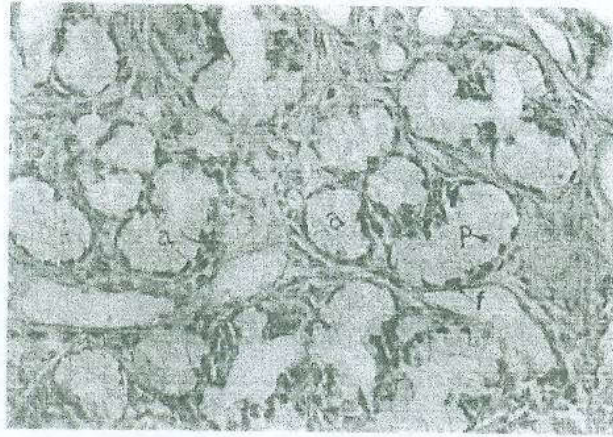


Plate 12: Cross-section in Cowper's gland of 3 months Barki ram lamb (x 480)
a: Alveoli p: Pyramidal cells
f: Flattened nuclei

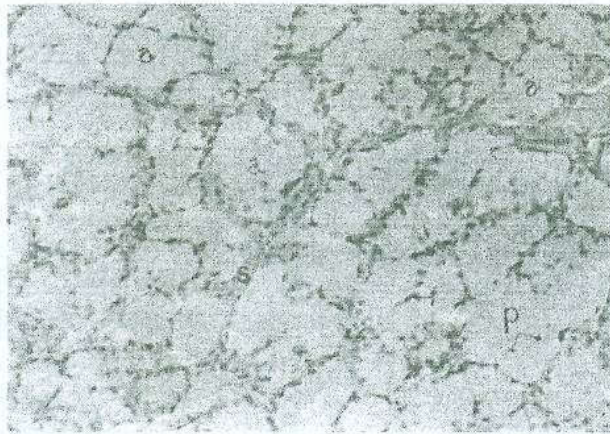


Plate 13: Cross-section in Cowper's gland of 12 months Barki ram lamb (x 270)
s: Septum p: Pyramidal cells

Present results (Table 4) showed that the height of epithelium lining Cowper's ducts ranged from 8.67 to 18.67 μ with an average of 14.37 μ .

Age of ram lambs had a significant ($P<0.05$) influence on the largest thickness of Cowper's capsule, while it was without significant influence on the smallest thickness of this capsule. In addition, age of lambs had a significant ($P<0.05$) effect on the smallest diameter of Cowper's ducts, while it was without significant effect on the largest diameter of these ducts. Age of animals, however, exerted a significant ($P<0.01$) influence on the height of epithelium lining the ducts.

Table (4) reveals that, the largest diameter of Cowper alveoli ranged between 45.93 and 72.13 μ with an average of 60.10 μ , while the smallest diameter ranged between 34.20 and 49.93 μ with an average of 42.8 μ . Gupta and Yashwant, (1982) found that alveoli diameter averaged 50.0 μ in Indian goats. This finding lie between the average largest and smallest diameters of the present results.

Age of the ram lambs had a significant ($P<0.01$) influence on largest and smallest diameters of the alveoli and height of epithelium lining these alveoli.

In conclusion the histological structure of the accessory glands (ampulla, seminal vesicles, pars disseminate of prostate and cowper's gland) at buberty were developed and appear to be active and secretion was observed in the lumen of the acini. It is well known that, male accessory glands, development is clearly dependent on androgen production Skinner and Rowson, (1968) and Skinner *et al.* (1968). Resko *et al.* (1999) showed that androgen production and accessory glands development in sheep precede the onset of spermatogenesis.

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التطورات الهستولوجية للجهاز التناسلى فى ذكور الأغنام البرقى بعد الميلاد
(ب) التطورات الهستولوجية للغدد الجنسية المساعدة

ثويبة أبو ستيت - محمود أحمد بيومى

مركز بحوث الصحراء - المطرية - مصر

أجريت الدراسة بمحطة بحوث مربوط التابعة لمركز بحوث الصحراء كان الغرض من الدراسة هو معرفة تأثير العمر على التطور الهستولوجى للغدد الجنسية المساعدة فى ذكور الأغنام البرقى بعد الميلاد. استخدم فى الدراسة عدد ٢٧ حولى برقى ذكر عمر شهر عند بدء التجربة وقد تم ذبح ٣ حوالى عند عمر ١، ٣، ٦، ٨، ١٠، ١٢، ١٤، ١٦، ١٨ شهرا.

ونلخص أهم النتائج فى الآتى:

غدة الأمبيولا:

كان لعمر الحيوانات تأثير معنوى عند مستوى معنوية ١% على أكبر وأصغر قطر للغدد الأنثوية لغدة الأمبيولا وكذلك ارتفاع الخلايا الطلائية المبطنة. وكذلك كان للعمر تأثير معنوى عند مستوى معنوية ٥% على أكبر وأصغر سمك للطبقة الليفية وارتفاع النسيج الطلائى المبطن لقناة الأمبيولا.

الحويصلات المنوية:

عمر الحملان له تأثير معنوى عند مستوى معنوية ١% على أكبر وأصغر قطر للأنايب الإفرازية وعند البلوغ زادت نسبة النسيج الإفرازى إلى النسيج الضام.

الجزء المنتشر من البروستاتا:

كان لعمر الحملان تأثير معنوى عند مستوى معنوية ١% على أكبر قطر لقنوات البروستاتا وكذلك على أكبر وأصغر قطر للحويصلات البروستاتية وارتفاع النسيج الطلائى المبطن لهذه الغدد الحويصلية.

غدة كوبر:

كان لعمر الحملان تأثير معنوى عند مستوى معنوية ٥% على أكبر سمك للكبسولة العضلية لغدة كوبر وكذلك على أصغر قطر لقنوات غدة كوبر. كما تأثر ارتفاع النسيج الطلائى المبطن لقنوات كوبر بالعمر معنويا على مستوى معنوية ١%.