

## **Computerized Microscopy Research on Structural Biology of the Seminiferous Tubules and Interstitial Gland at the Cocks 90-120 Days Old**

**Valerica D NACU, CORNIL N., Nicoleta MOCANU,  
tefania PREDOI, M. CORNIL**

Facultatea de Medicina Veterinara, Bucuresti  
valericadanacu@yahoo.com

**Abstract.** From the age of 90 days is clear that an end point of pseudostratified seminal epithelium, but the cell types and Sertoli cells are still prevails spermatogoniums and take the other two age as described above. There is a very intense reaction P.A.S. Take the positive step of tubular basement of the seminiferous membrane.

There are many cells in semen Sertoli epithelium, in peritubular are located myofibroblasts.

From the age of 120 days in the seminal epithelium are present all cells of the seminal line. Basement membrane of seminiferous tubules is evident, and intertubular connective tissue is P.A.S. positive.

Sertoli cells (cells sustentacular) from cells support undifferentiated of the gonads of prepubertal.

These cells are active from point of the mitotic, contains large amounts of rough endoplasmic reticulum and produce paramesonephrotic hormone, a glycoprotein that inhibits development of female to male genitalia.

At the age of 90 days it observe a quantitative reduction of intertubular.

Interstitial endocrinocytes have different size, some are fusiforme, others have cytoplasm vacuolar, being involved in hormonegenesis.

**Keywords:** seminiferous tubules, seminal epithelium, endocrinocytes, Sertoli cells, Interstitial gland, myofibroblasts

### **MATERIAL AND METHOD**

The researches were conducted on testes harvested from cock, race-variety white Leghorn 90 and 120 days, normally developed, clinically healthy, vaccinated, macroscopically and microscopically examined.

It made an experiment which included two lots of cocks, each lot consisting of 4 copies each, from each individual were collected pieces of testicular parenchyma from skull pole, caudal, medial edge and lateral edge.

The inspection of histological preparations were made on permanent histology, processed by usual histological techniques and colored by hematoxylin-eosine method, Giemsa slow sections, Tanzer-Unna and P.A.S histochemical techniques.

## RESULTS AND DISCUSSIONS

At the specimens from the age of 90 days the seminal epithelium looks like pseudostratification, but the predominant cell types are Sertoli cells and spermatogoniums as the other two ages above. A ppears a P.A.S. positive reaction very intense in the basement membrane of seminiferous tubes.

In the seminal epithelium are many cells Sertoli and myofibroblastes are located peritubular.

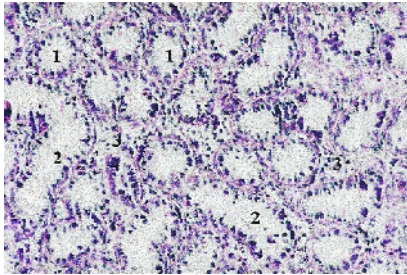


Fig. 1 Cocks testicle by 90 days.

P.A.S. Ob 10x

1-seminiferous tube transversely sectioned;

2- seminiferous tube sectioned obliquely;

3-Interstitial gland;

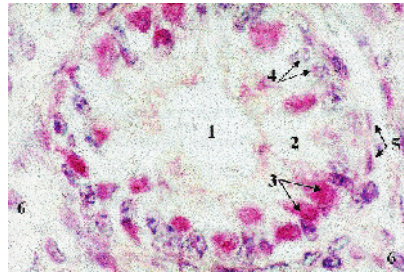


Fig.2 Seminiferous tube sectioned transversally at Cocks by 90 days.H.E.,Ob.40x

1-lumen; 2-seminal epithelium;

4-Spermatogoniums; 5- nucleus myofibroblast; 6- Leydig cells

During puberty, differentiation of cell sustentacular is accompanied by a morphological transformation and loss of mitotic ability (at adult Sertoli cells no longer divide).

As spermatogoniums, Sertoli cells are among the most resistant cells in the germinal epithelium in inadequate conditions (infections, malnutrition, irradiation) and remain the predominant cell type in aging gonads.

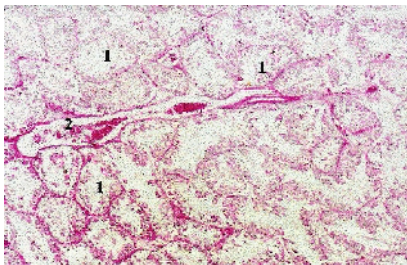


Fig. 4 Testicular parenchyma at cocks by 90 days, P.A.S., ob 4X

1- seminiferous tubules;

2- blood vessel;

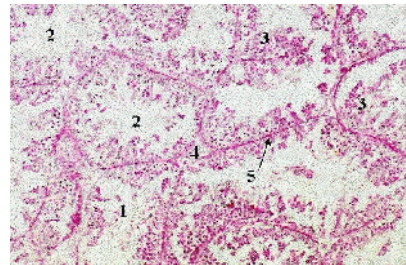


Fig. 4 Testicular parenchyma at cocks by 90days, P.A.S., ob 10X

1- seminiferous tubules; 2-lumen;

3- seminal epithelium; 4-Interstitial gland;

5- basement membrane;

Inside the testicular parenchyma appear muscular type arteries and in seminal epithelium predominate are spermatocytes by first order.

Appear spermatocytes by second order and spermatosoides.

Secondary spermatocytes are located more centrally from primary spermatocytes, were short-lived, intermediate size and spherical nucleous.

By mitotic division pass in spermatides, round cells with spherical nucleous, possessing a haploid number of chromosomes and resembling with secondary spermatocytes, but smaller.

At the age of 120 days has seen an increase in both the outer diameter of seminiferous tubules, lumen diameter, and a significant increase in seminal epithelium height.

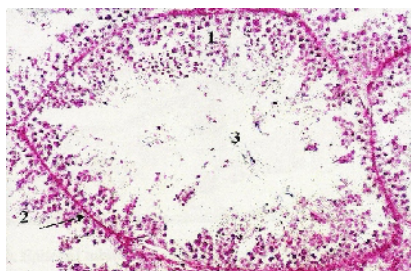


Fig. 5 Seminiferous tube at cocks by 120 days, P.A.S., ob 20X  
1-seminal epithelium; 2- basement membrane;  
3-lumen;

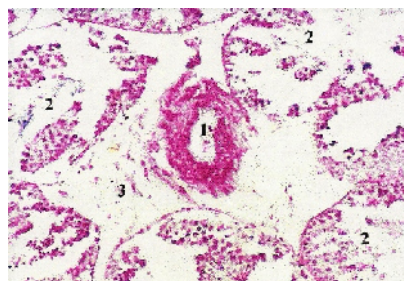


Fig.6 Testicular parenchyma at cocks by 120 days, P.A.S., o 20X  
1-seminal epithelium;  
2-spermatozoa in the lumen;

Compared with the height of the epithelium at cocks by 90 days old, with those 120 days, the outer diameter of seminiferous tubules has reached an average of 217, 575  $\mu\text{m}$ , lumen diameter of seminiferous tubules averaged 104, 716  $\mu\text{m}$ , and the height of epithelium is double, noting average of 56, 429  $\mu\text{m}$ .

Outer diameter of seminiferous tubules, lumen diameter and height of epithelium at cock by 120 days old:

SEMINIFERIOUS TUBULES	OUTSIDE DIAMETER ( $\mu\text{m}$ )	LUMEN DIAMETERS ( $\mu\text{m}$ )	EPITHELIUM HEIGHT ( $\mu\text{m}$ )
1	218,182	83,838	67,172
2	215,151	78,788	68,181
3	168, 687	95,960	36,363
4	169,697	71,717	48,990
5	191,913	95,960	47,976
6	187,879	100,000	43,939
7	277,778	145,454	66,162
8	318,182	148,485	84,848
9	157576	80,500	38,538
10	270,707	146,465	62,121
<b>MEDIA</b>	<b>217,575</b>	<b>104,716</b>	<b>56,429</b>

At the age of 120 days it observe a quantitative reduction of intertubular.

Interstitial endocrinocytes have different size, some are fusiforme, others have cytoplasm vacuolar, being involved in hormonegenesis.

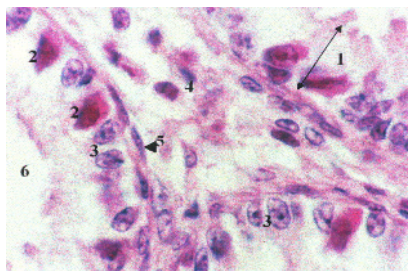


Fig. 7 Interstitial gland al cocks by 120 days  
HE.,Ob40X

1- seminal epithelium; 2- Sertoli cells;  
3- spermatogoniums; 4- interstitial gland;  
5- myofibroblasts; 6- lumen of the seminiferous  
tube;

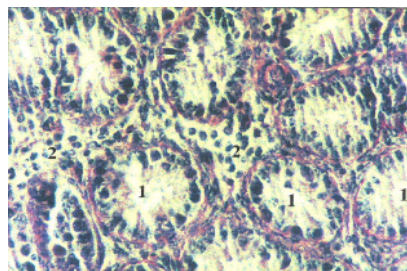


Fig. 8 Seminiferous tubules and  
interstitial gland at cocks  
by 120days P.A.S., Ob 20X

1- seminiferous tubules sectioned  
transversely;  
2- interstitial gland;

As the advance in age, intertubular space where is interstitial gland is progressively reduced .

In sections stained by Tanzer-Unna method interstitial gland appear in tubular tissue, delimited by elastic fibers from the basal lamina of seminiferous tubules.

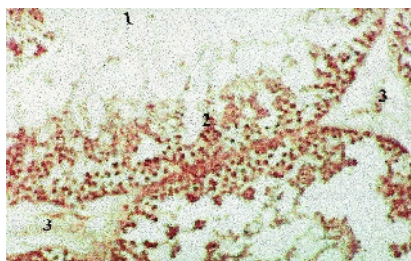


Fig. 9 Testicular parenchyma at cocks  
by 120 days, Tanzer-Unna, Ob. 20X

1- lumen of the seminiferous tube;  
2- seminal epithelium;  
3- interstitial gland;

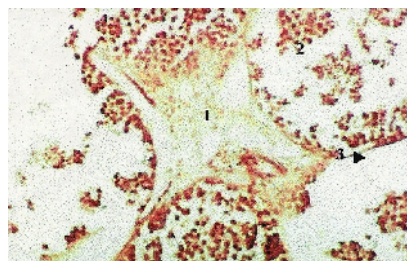


Fig. 10 Interstitial gland al cocks by 120 days  
Tanzer-Unna, Ob. 20X

1- interstitial gland;  
2- seminal epithelium;  
3- basement membrane;

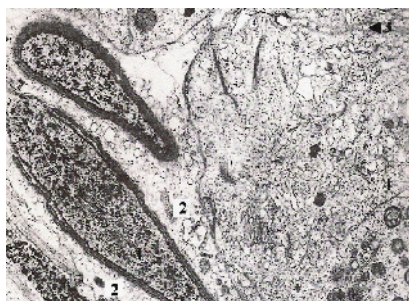


Fig. 11 Sertoli cell (X10.000)

1- *spermatida elongated*;

2- *Sertoli cell*;

3- *two plasmalema*;

4- *ribosomes*;

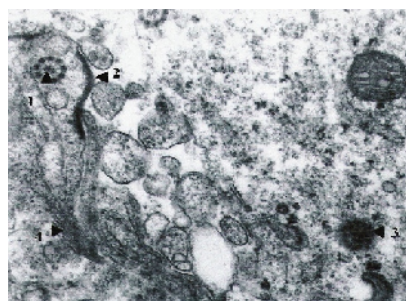


Fig. 12- Seminal epithelium;

1- *axoneme of the flagel*;

2- *desmosomes in band*;

3- *lisosomi*;

4- *rough endoplasmic reticulum*.

## CONCLUSIONS

- At the age of 90 days the seminal epithelium tends to pseudostratification. At the age of 120 days in the seminal epithelium are present all types of cells of the seminal line - primary spermatocytes, secondary spermatocytes, spermatide and spermatozoa, that indicating onset of spermatogenesis process. Sertoli cells were observed in cross sections of seminiferous tubules, they are willing unistratal, with the nuclei located basal, polymorphous nucleolus sometimes triangular course.
- Sertoli cell is located on the basement membrane of seminiferous tube that makes complex jonctionale.
- At the age of 90 and 120 days the interstitial Leyding gland appears in intertubular tissue, delimited by the elastic fibers from the basal lamina of seminiferous tubules.
- It is noted that the basement membrane of seminiferous tube is thick and shows numerous invagination directed to the cytoplasm of the Sertoli cells.
- The cytoplasm of the Sertoli cell is dense and has more organismous- numerous cistern of smooth endoplasmatic reticulum, numerous mitochondria, rough endoplasmic reticulum profiles, lysosomal, Golgi complex, centrioli, etc.

3.6 At the age of 120 days has seen an increase in both the outer diameter of seminiferous tubules, lumen diameter, and a significant increase in seminal epithelium height.

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