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## MORPHOFUNCTIONAL CHARACTERISTICS OF OVARIES IN GOATS

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### ABSTRACT

*The development of indications of the use of gonadotropin and prostanoids in goat breeding should be based on the knowledge of the patterns of gametofolliculo and luteogenesis in the ovaries and their dysfunctional disorders, taking into account the season of the year, the manifestations of the stages of the reproductive cycle and during pregnancy. In this regard, we studied morphological and functional changes in the ovaries of goats in different seasons of the year, at different stages of the reproductive cycle and at different stages of pregnancy, and then we developed a technique for hormonal correction of the sexual function of goats. Experimental studies included the slaughter of experimental goats with extirpation of the ovaries and determination of their weight, size, presence of yellow and atretic follicle bodies, as well as follicular luteal cysts.*

**KEYWORDS:** *Prostanoids, Goat Breeding, Gametofolliculo, Ovaries, Morphofunctional Characteristics.*

### INTRODUCTION

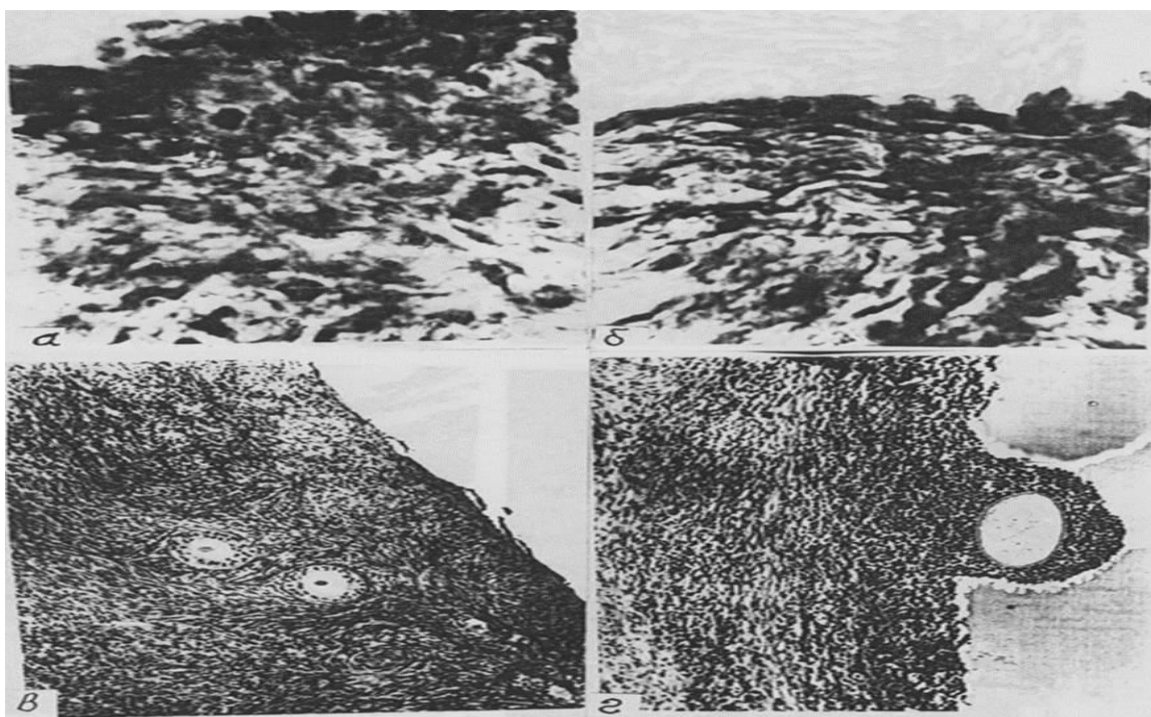
On the prepared histological sections, the structure of the primordial epithelium, the tunica albuginea, the cortical and medulla, the patterns of oogenesis, the formation of primordial follicles, their transformation into secondary and tertiary, the development of lytic processes in the corpus luteum under the influence of the tested doses of drugs, as well as the growth of follicles, their maturation were studied and ovulation. Histofunctional changes in the ovaries were compared with the dynamics of sex hormones.

Morphofunctional changes in the ovaries of goats in a seasonal aspect (July, October, April) were studied in 40 animals.

It has been established that a constant gametogenesis from the primordial epithelium and the formation of primordial, secondary and tertiary follicles are common to the ovaries of animals, regardless of the season of the year, the state of sexual function and pregnancy (Fig. 1 a. The further fate of these follicles is determined by the season of the year and the state of sexual function. In particular, in the summer, the ovaries are determined from 1-4 large, 2-7 medium-sized and 11-26 small follicles. Yellow and atretic bodies are absent. Histological examination of the ovaries showed that in the summer season, growing follicles do not reach ovulation maturity, but undergo cystic atresia.

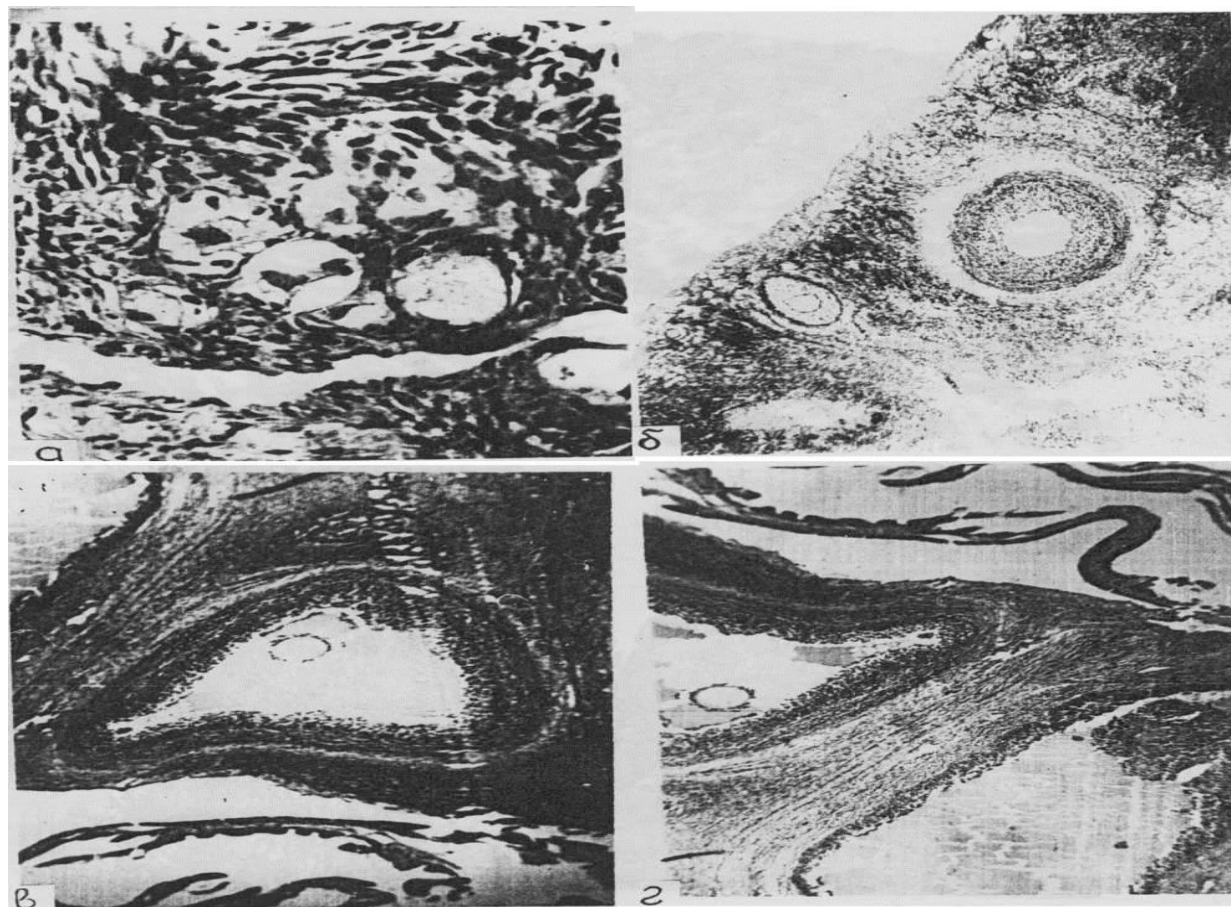
The basis of this phenomenon is the development of dystrophic processes in the tecal tissue of the follicles with subsequent reduction of granulosis and the egg (Fig. 2.a. b.v.g). The mechanism of this process is that if, as the secondary and tertiary follicles grow, the well-vascularized tecal tissue comes into a state of hyperplasia and hypertrophy, then with the increase in the size of the follicles in theca-luteal cells, lytic processes develop with the formation of a fibrous structure.

These processes occur against the background of decreased vascularization of the tecal tissue. In this case, large vessels are obliterated, and small vessels are reduced. That is why large follicles defined in the ovaries in the summer season are at different stages of cystic atresia and replacement of the gonads with the surrounding tissue of the cortex, which excludes the possibility of their maturation and manifestations of the phenomena of the stage of sexual cycle excitation.



**Figure 1. Ovaries of goats. Gametogenesis from the primordial epithelium (a, b) the formation of primordial, secondary and tertiary follicles (c, d). Coloring, hematoxylin-eosin. SW a, b-1000, c, g-70.**

It should be noted that in the summer season, most of the formed primordial and growing secondary and tertiary follicles enter a state of dystrophy, and only a few of them in well-vascularized and morphogenically active parts of the cortical substance of the ovaries continue to grow and develop, reaching large sizes. In this regard, one of the factors of seasonal inhibition of sexual function in goats in the summer is the morphogenic insufficiency of the mesenchymal elements of the cortical substance and, as a consequence, the thecal tissue of the follicles. This excludes the possibility of maturation of follicles, their ovulation and the formation of yellow bodies, as well as the manifestation of phenomena of the stage of excitation of the sexual cycle. Therefore, against the background of low morphogenic potency of the mesenchymal elements of the cortical substance of the ovaries and the thecal tissue of growing follicles, the use of gonadotropic and prostanoid preparations is inappropriate.

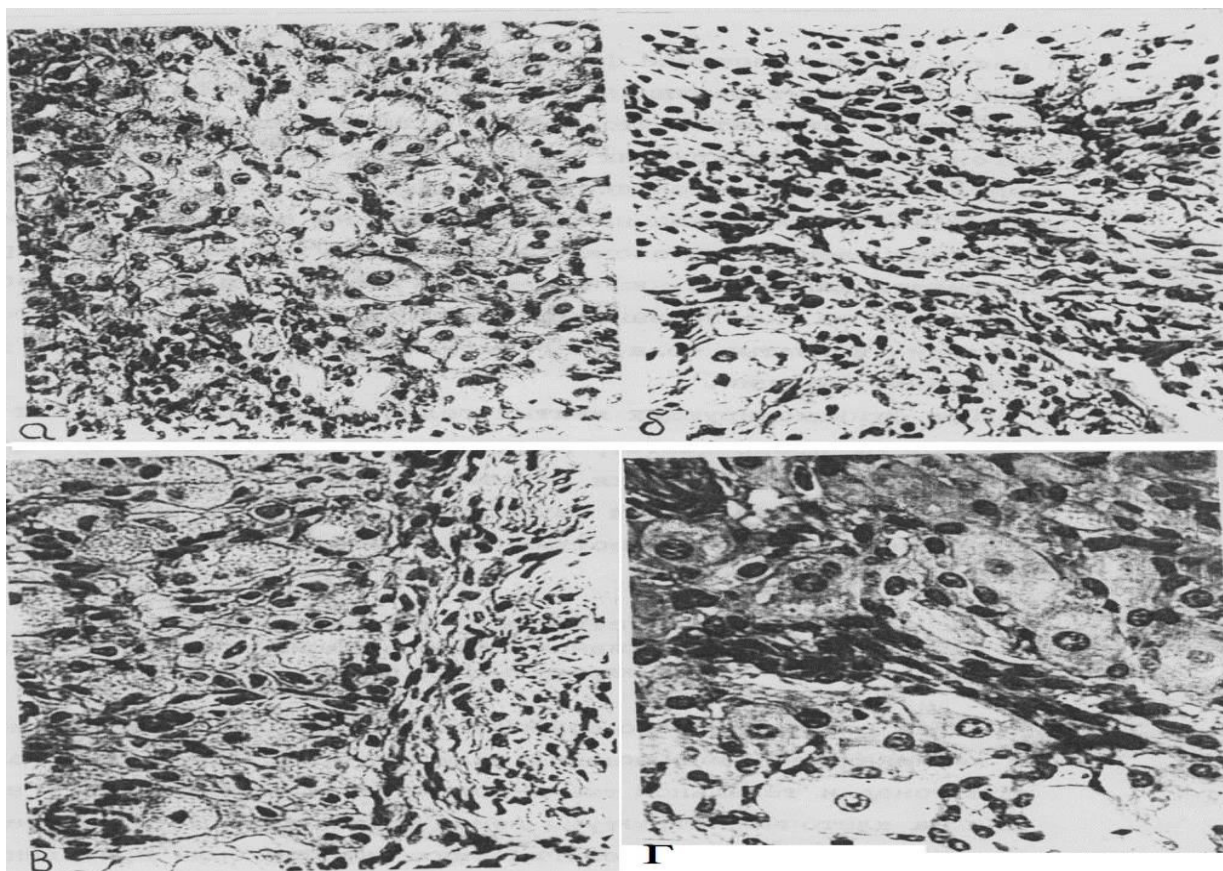


**Figure 2. Ovaries of goats. Dystrophy of primordial (a) secondary and tertiary follicles (a, b, c, d). Hematoxylin-eosin stain. SW a-280; 6-70; c, g-24.5.**

A histological study of the ovaries of goats showed that the phenomenon of gametogenesis from the primordial epithelium with the formation of primordial follicles and their transition to secondary and small tertiary is observed constantly and regardless of the state of sexual function and the presence or absence of yellow bodies in the gonads.

Maturation and ovulation of follicles occurs only with a certain state of sexual function. In particular, with ovarian hypofunction, despite the growth of primary, secondary, and small tertiary follicles, their full maturation and ovulation does not occur, which is associated with hypoplasia of the connective tissue elements of the cortical substance of the ovary of the follicle membranes.

With the activation of the sexual function of goats, which is observed in early autumn, as well as during the involution of the corpus luteum of the reproductive cycle, vascularization and proliferation of internal theca cells are intensified, which creates trophic conditions for hyperplasia and hypersecretion of granulosa (Figure 3.a.b.v.g). In this regard, growing follicles reach large sizes, then they ovulate and form the corpus luteum.



**Figure 3. Ovaries of goats. The formation of yellow bodies. Hemotoxylin-eosin stain. SW a, b, c-280 g-400.**

It should be noted that yellow and atretic bodies are formed from proliferating cells of the internal theca, while granulosa undergoes dystrophy. In this regard, well-vascularized functionally active connective tissue elements of the shells of graaff vesicles should be considered as tissue that performs trophic support for the growth and maturation of follicles, plastic (conversion to yellow bodies) and hormonal (progesterone production) functions.

With the functioning yellow bodies of the genital cycle, the growth of follicles does not stop, however, they do not reach ovulation maturity, but undergo atresia. Consequently, the maturation

of follicles and the implementation of the ovulation effect are determined by the potential capabilities of the connective tissue elements of the ovaries.

### CONCLUSION:

1. In the ovaries of goats, regardless of the season of the year and the state of sexual function, there is a constant formation of primordial follicles and their growth. The maturation of follicles, their ovulation and the formation of yellow bodies depends on the season of the year and is determined by the morphogenic potency of the mesenchymal elements of the cortical substance of the ovaries and the thecal tissue of the follicles.

2. It has been established that in the summer season vascularization decreases in the thecal tissue of growing follicles, and they come into a state of hypoplasia, which excludes the possibility of their maturation and ovulation. With the onset of the random season (autumn), these processes are activated, completed by the maturation of follicles, their ovulation and the formation of yellow bodies. The same pattern in the follicle and luteogenesis of the ovaries appears against the background of involution of the corpus luteum of the reproductive cycle.

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