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THE FOLLICULAR STRUCTURES IN THE INTERMEDIARY LOBE OF THE BULL HYPOPHYSIS

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ABSTRACT *- As a research material we have used the hypophyses of 14 Holstein bulls aged of 3-8 years. The samples have been fixed in Orth, Carnoy, and Helly, led up to paraffin, and serially sectioned at 5 µm. We have finally obtained 420 serial sections stained through the methods Novelli, PAS, Papanicolau, MH_2, Fontana, Steedman-Mowry, Bielschowsky, Bodian and Holmes. The intermediary lobe is well developed in the bull. It is always adjacent to the posterior lobe of the bull hypophysis, and separated from it by a discontinuous layer of conjunctive tissue. The follicular structures (110-360 µm), containing colloid in the lumen, were found in the intermediary lobe of 14 bull hypophysis. A thin conjunctive tissue separated these follicular structures. They formed cysts, which contained colloid. The colloid is a pale-staining material, PAS-positive, and is surrounded by simple squamous or cubical epithelium. The colloid consists in a glycoprotein in the Steedman-Mowry stain. The intermediary lobe of the hypophysis makes a hormone MSH (Melanocyte Stimulating Hormone), which is responsible for the expansion of melanocytes from the animals' skin.*

Key Words: bull hypophysis, intermediary lobe, follicular structures

REZUMAT - Structuri foliculare în lobul intermediar al hipofizei de taur. *Ca material de cercetat au servit hipofizele de la 14 tauri Holstein, în vârstă de 3-8 ani. Fragmentele au fost fixate în Orth, Carnoy şi Helly, conduse la parafină şi secţionate la 5 µm. Au fost obţinute 420 de secţiuni seriate, colorate prin metodele: Novelli, PAS, Papanicolau, MH_2, Fontana, Steedman-Mowry, Bielschowsky, Bodian şi Holmes. Lobul intermediar al hipofizei la taur este bine dezvoltat. Acesta este în vecinătatea lobului posterior al hipofizei de taur, separat printr-un strat discontinuu de ţesut conjunctiv. Structuri foliculare cu dimensiunea de 110-360 µm conţinând coloid în lumen au fost evidenţiate în lobul intermediar al hipofizei la 14 tauri. Aceste structuri foliculare sunt separate de un ţesut conjunctiv delicat; ele formează chişti care conţin coloid PAS-pozitiv, delimitat de un epiteliu scuamos sau cubic simplu. Coloidul este o glicoproteină în coloraţia Steedman-Mowry. Lobul intermediar al hipofizei secretă MSH*

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(Melanocyte Stimulating Hormone) care este responsabil de distribuirea melanocitelor din pielea animalelor.

Cuvinte cheie: hipofiza de taur, lob intermediar, structuri foliculare

INTRODUCTION

The follicular structures were noticed in the adeno-hypophysis of humans, pigs, rams, dogs and rats (Bergland and Torack, 1969; Cotea et al., 1997; Cotea et al., 2004; Horvat et al., 1974; Kagayama,1965;. Kubo et al., 1992; Vila-Porcile, 1972). In all these species, the follicular structures from the intermediary lobe of hypophysis have different sizes, and the colloid, which is pointed out in their lumen, is PAS-positive. We did not find in the specialty literature the follicular structures identified in the intermediary lobe of bull hypophysis, fact justifying our investigations.

MATERIALS AND METHODS

As research material, we have used the hypophyses of 14 Holstein bulls, aged of 3-8 years. The 28 fragments, resulted from medio-sagital serial sections of hypophyses, were fixed in Carnoy and Helly, included in paraffin, and sectioned at 5 μm. They were stained through methods Novelli, PAS, Papanicolau, MH_2, Fontana, Steedman-Mowry, Bielschowsky, Bodian and Holmes.

RESULTS AND DISCUSSION

In the intermediary lobe of the adenohypophysis from investigated young bulls, the follicular structures of variable sizes (110 - 360 μm) were pointed out. They were structured from a cubic epithelium of 7-9 μm, with epithelial cells containing ovulary nuclei of 4 μm (*Figures 1-16*).

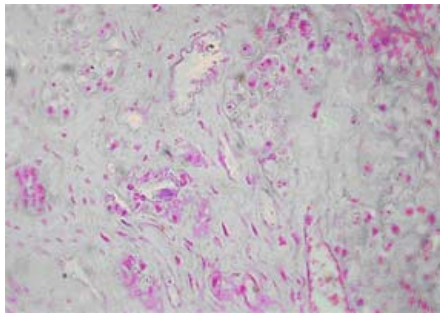

Fig. 1. Hypophysis – intermediary lobe of 4 year-Holstein bull. Vesicle with secretion in lumen. Col. MH_2; x 200

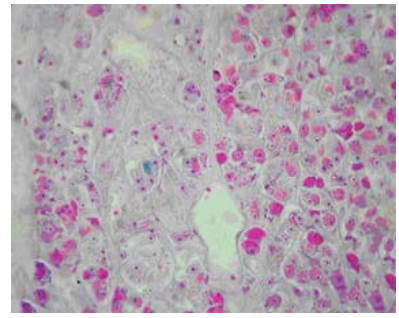

Fig. 2. Hypophysis – intermediary lobe of 4 year-Holstein bull. Vesicle with secretion in lumen. Col. MH_2; x 200

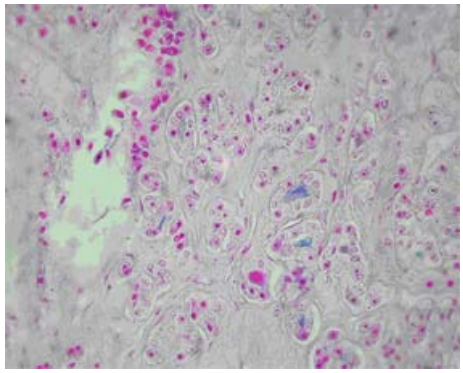

Fig. 3. Hypophysis – intermediary lobe of 4 year-Holstein bull. Vesicle with secretion in lumen Col. MH_2; x 200

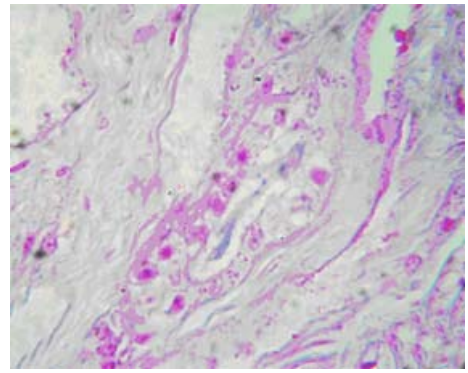

Fig. 4. Hypophysis – intermediary lobe of 4 year-Holstein bull. Vesicle with irregular lumen. Col. MH_2 x 400

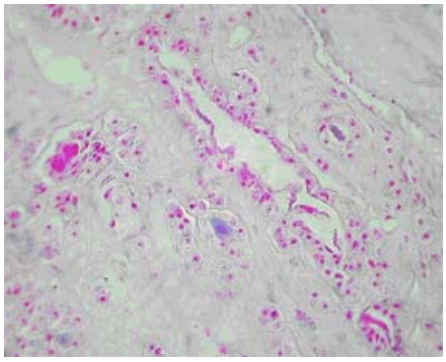

Fig. 5. Hypophysis – intermediary lobe of 4 year-Holstein bull. Vesicle with secretion in lumen Col. MH_2 x 200

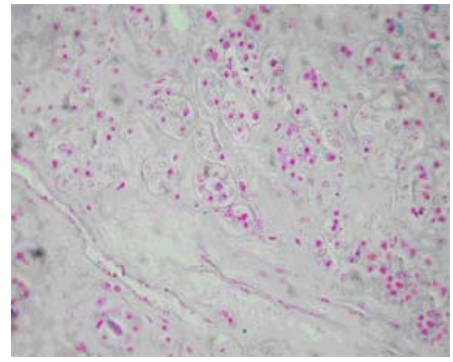

Fig. 6. Hypophysis – intermediary lobe of 5 year-Holstein bull. Vesicle with secretion in lumen. Col. MH_2 x 200

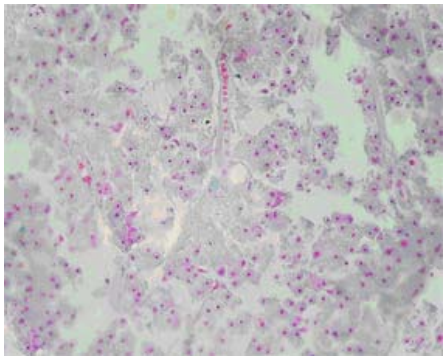

Fig. 7. Hypophysis – intermediary lobe of 5 year-Holstein bull. Vesicle with secretion in lumen. Col. MH_2 x 200

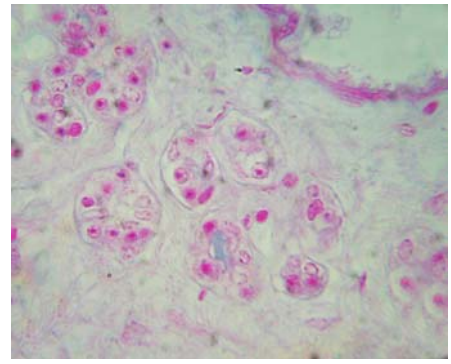

Fig. 8. Hypophysis – intermediary lobe of 5 year-Holstein bull. Vesicle with secretion in lumen. Col. MH_2 x 400

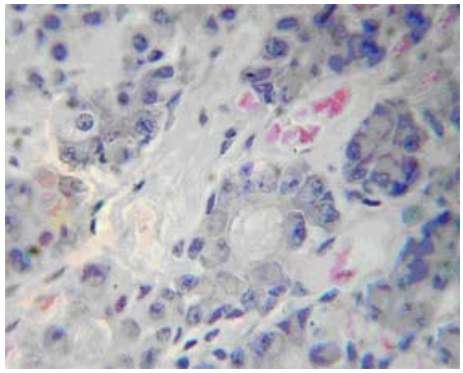

Fig. 9. Hypophysis – intermediary lobe of 7 year-Holstein bull. Vesicle with secretion in lumen. Col. MH_2 x 400

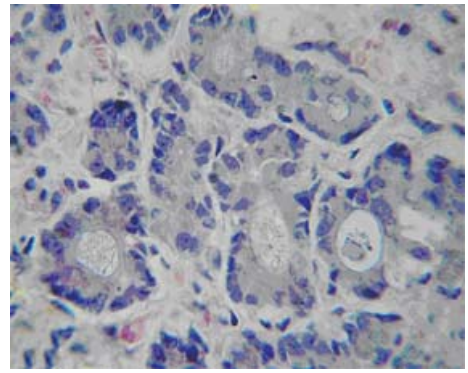

Fig. 10. Hypophysis – intermediary lobe of 7 year-Holstein bull. Vesicle with secretion in lumen. Col. MH_2 x 400

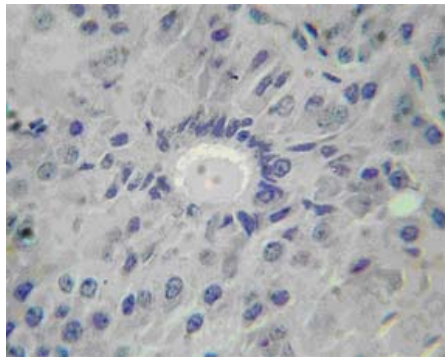

Fig. 11. Hypophysis – intermediary lobe of 7 year-Holstein bull . Vesicle with secretion in lumen Col. MH_2 x 400

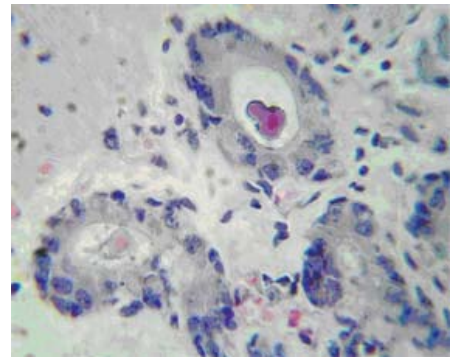

Fig. 12. Hypophysis – intermediary lobe of 7 year-Holstein bull. Two vesicles with secretion in lumen. Col. MH_2 x 400

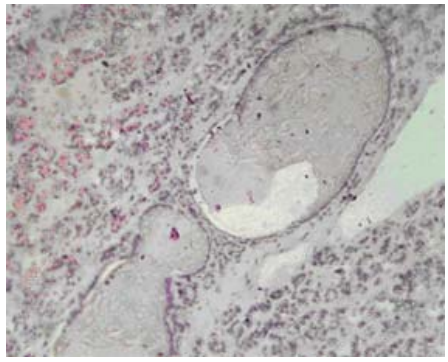

Fig. 13. Hypophysis – intermediary lobe of 7 year-Holstein bull. Two vesicles with secretion in lumen. Col. PAS x 80

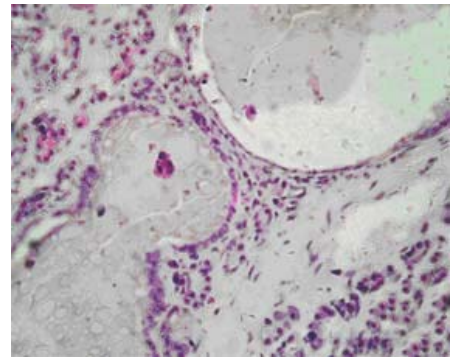

Fig. 14. Hypophysis – intermediary lobe of 7 year-Holstein bull. Two vesicles with secretion in lumen Col. PAS x 200

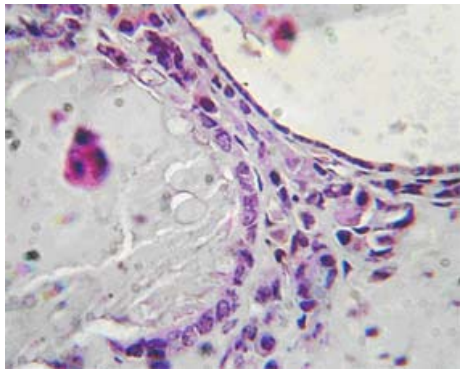

Fig. 15. Hypophysis – intermediary lobe of 7 year-Holstein bull. Two vesicles with secretion in lumen Col. PAS x 400

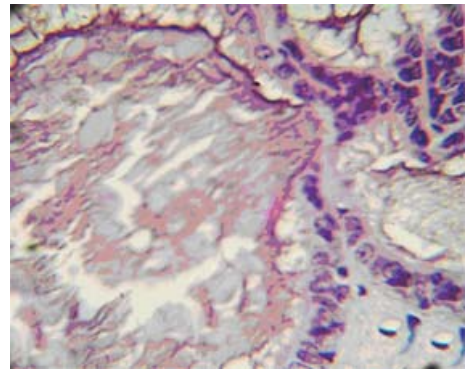

Fig. 16. Hypophysis – intermediary lobe of 8 year-Holstein bull. Two vesicles with secretion in lumen Col. PAS x 400

Some follicular structures contain in their lumen a homogeneous colloid, PAS-positive and without marginal resorption vacuoles. We have to mention that in other follicular structures from the intermediary lobe of bull adenohypophysis, the colloid has marginal resorption vacuoles, a sign of intense MSH. The follicular structures, frequently present in the intermediary lobe of bull hypophysis, where the colloid has marginal resorption vacuoles, show a high level of MSH.

CONCLUSIONS

In the intermediary lobe of bull adenohypophysis, follicular structures were noticed, with variable sizes (110-360 μm), which are delimited by a cubic epithelium of 7 - 9 μm.

In the lumen of some follicular structures, a homogenous colloid was noticed, PAS-positive, without marginal resorption vacuoles.

In some bulls, the colloid from follicular structures has marginal resorption vacuoles, showing a high level of MSH.

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