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## Histological structure of Azerbaijan buffalo Uterus

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### ABSTRACT

Asian buffalo is economic animal for variant reasons in different regions of Iran. This animal either is important for reason of resistance against local disease or is important for reason of high production from low quality of food materials. Meanwhile, different and broad genetical, nutritional and structural studies are not performed on buffalo completely. Therefore this ruminant is unknown animal yet. Study of normal structure of genital system of this animal is very important for diagnosis of genital system disorders and enhancement calve and milk production. Melanocytes are a series cell which originated from skin basal layer cells. These cells are placing in skin basal layer and they are producing melanin pigment. 10 healthy buffalo uterus were selected from Tabriz semiindustrial slaughterhouse. The selected uterus were fixed by 10% formalin and then tissue sections were provided. Sections were stained by H&E method firstly and then by special staining method for melanocytes. This research results were showed which endometrium, premetrium and myometrium can be observed in buffalo uterus similar to other mammals. Because muscularis mucosa is not observed in tunica mucosa of buffalo uterus, lamina propria and tunica submucosa is united. Lamina propria and tunica submucosa is occupied by simple tubular and simple coiled tubular gland. Also, based on this research results, many melanocytes is observed in Lamina propria and tunica submucosa of Azerbaijan buffalo. Existence melanocytes in buffalo uterus is not reported till this time. This report is the first report of this cell in this organ.

**Keywords:** Buffalo, Histology, Melanocyte, Uterus.

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## Introduction

Buffalo is belonged to order of artiodatylae suborder ruminatae, family bovidae and species bovini. In Bovini species, 3 group are reported which they are Bovina (cow), Bubalinae (Asian buffalo) and Sincerina (African buffalo). Du to genetical variations, different groups of buffalos cannot couple. Asian and African has many similarities in surface anatomy but they have many deep anatomical varations. Therefore, they are placing in two different groups (6).

Enough information is not about origin of Iranian buffalo but du to many similarities between south Iranian buffalo and Indian buffalo, researchers are suggesting which Iranian buffalo is originated from Indian buffalo (6). Genital system is important for reproduction and milk production (1, 2 and5). Enough information about this system is vital for enhancement reproduction, Milk production and breeding (6). Melanocytes are a series cell, which originated from skin basal layer cells and belonged to epithelial tissue They are producing melanin pigment which melanin is responsible for dark skin color. Melanin production is controlled by pineal body secretion, which is named melatonin.

Melanocytet are observed in connective complete randomly and very rare. The role and reason of existence melanocytes in connective tissue is not explained completely (1, 2 and5).

## Material and methods

10 healthy and non-pregnant buffalo uterus selected from Tabriz semiindustrial slaughterhouse for histomopholglcal study. The uteruss were inspected and uteruses without any disorder for example pyometritis, metritis and etc were collected. The uteruses immersed in 10% formalin and then they fixed for 7 to 10 days. Then fixed utreruses were tissue processing and tissue sections were prepared. Tissue sections were stained by H&E method firstly and then they were stained by melanocyte staining method. Sections were observed by routine light microscope and then with phase contrast light microscope.

## Results

Obtained results of histological studies of Azerbaijan buffalo uterus were appeared which three different layers can be observed in it uterus. They are endometrium (tonica mucosa with tunica submucosa), myometrium (muscular layer) and primetrium (serousal layer). Fig. 1.

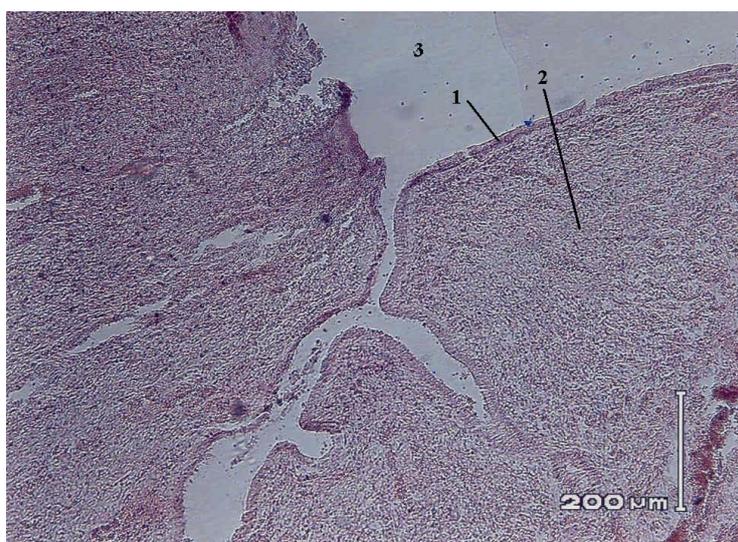


Fig (1) Histological section of buffalo uterus. 1- lining epithelium is pseudostritified columnar epithelium 2-Lamina propria & tunica submucosa is occupied with loose connective tissue. There is carunlce, therefore uterine gland absent.3- lumen of uterus. H&E Staining method, Magnification x100 .

Epithelial tissue of Azerbaijan buffalo was pseudostratified ept. with ciliated cell. This epithelial tissue was lining all inner surface of uterus. In some regions, epithelial tissue invaginated to laminae propria and tunica submucosa and changed to simple columnar ept. and made uterus glands. Fig. 1 and 2. Du to, muscularis mucosa absent, lamina

properia is joined to tunica submucosa. Because predominate of connective tissue cell in lamina propria and tunica submucosa, type of this connective tissue was diagnose loose connective tissue which uterus glands invaginated into them and occupied many space of them. uterus gland extended to near medial longitudinal muscular layer. Fig. 2.

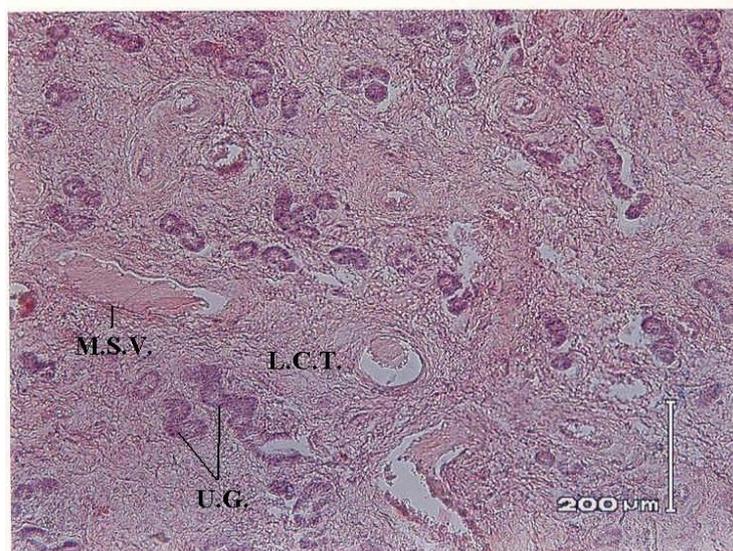


Fig (2) Histological section of lamina propria & tunica submucosa of buffalo Azerbaijan uterus. M.S.V.-Medium size vein, L.C.T. Loose connective tissue, U.G. Uterus gland. H&E Staining method, Magnification  $\times 100$ .

Uterus glands did not observed in some regions of uterus lining epithelium. In these regions was observed the structures which are named caruncle Fig.1. Type of uterus glands was diagnosed simple tubular and simple branched tubular. Epithelial tissue of body of this glands and ducts of this gland was diagnosed simple columnar epithelium. Fig. 2.

Different type of cells of connective as fibroblast, fibrocyte, mast cell, and plasma cell was observed in loose connective tissue of Tunica muscularis was containing two layers of smooth muscles cells. Smooth muscles cells were fusiform and had cigarette shape nucleus. Smooth muscle cells were observed in circular direction in medial layer and in longitudinal direction in lateral layer. Fig. 4.

Primetrium was outer layer of Azerbaijan buffalo uterus. This part of uterus was

lamina propria and tunica submucosa of Azerbaijan buffalo uterus. Except normal connective cell, many melanocyte was observed in lamina propria and tunica submucosa of this animal uterus. Observation of these cells in this organ and in this animal is abnormal completely and did not report until this time. For more confidence, the sections stained by melanocyte staining method. Obtained results of observation of these sections were confirmed firstly results. Fig.3 . composed of dens irregular connective tissue, which was containing collagen and elastic fibers. Collagen fibers were predominant. This connective tissue was covered by simple squamous epithelium in all it regions which this tissue was called mesothelium. Fig.4.

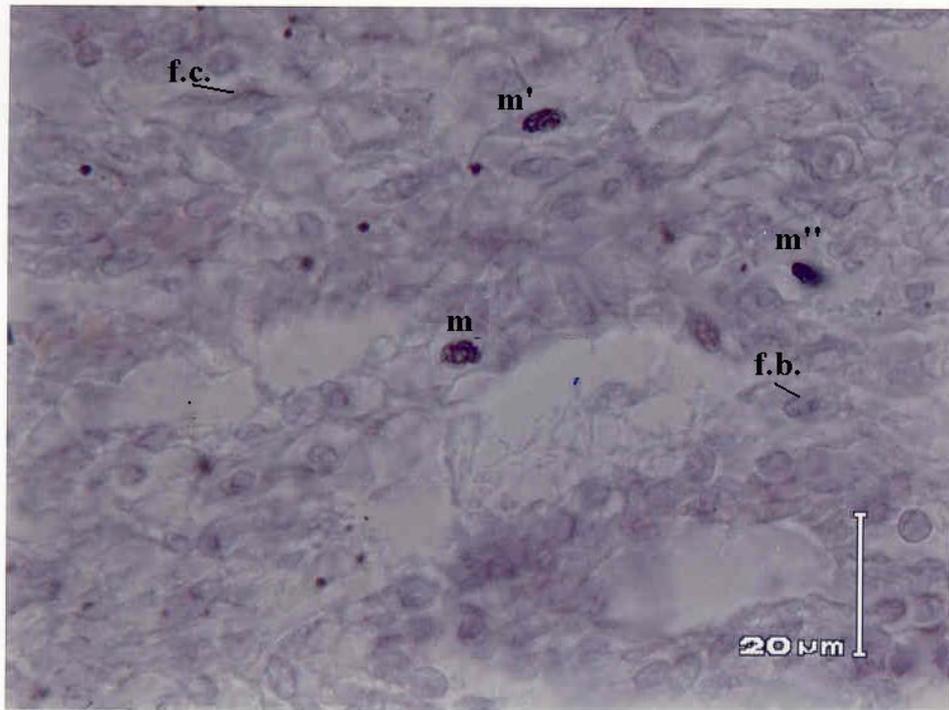


Fig (3) Histological section of lamina propria & tunica submucosa of buffalo Azerbaijan uterus. m, m' and m'' melanocytes cells which have many melanin pigment in its cytoplasm. f.b., fibroblastic cells. f.c., Fibrocystic cells. Melanocytic staining method, Magnification ×1000.

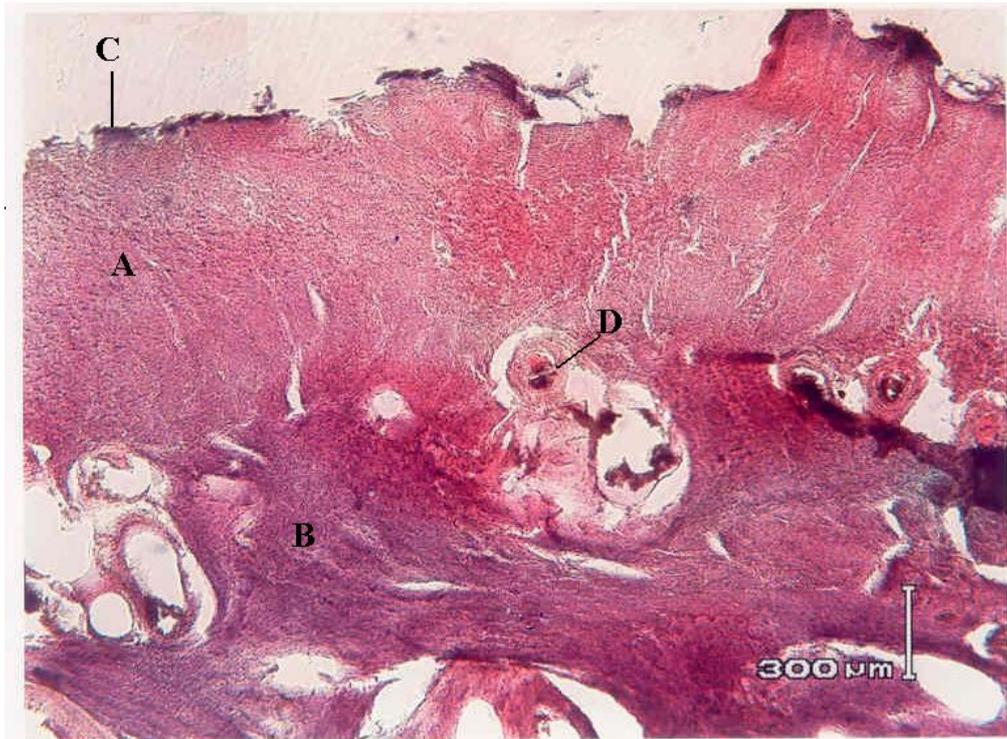


Fig (4) Histological section of tunica muscularis of Azerbaijan buffalo. A-Outer longitudinal smooth muscle layer B- Inner circular smooth muscle layer C- Tunica serosa D- Medium size artery. H&E Staining method, Magnification ×150.

### Conclusion

The uterus is a part of mammal female genital system which it is a place for supporting and developing of embryo and fetus (1,2 and 4). This

organ is pear – shaped in human and primates and it has not uterus horn (2). However, it has uterus horn in domestic animals and uterine horns were connected to uterus by uterine

horn. The uterus was continued to vagina by cervix. The shape and morphological characteristics of uterus are different in different animals (2 and 5). Male genital system of buffalo is same as male genital system of cow in many morphological characteristics but they have many variations in morphological characteristics also for example, uterus horn of buffalo have more circle and buffalo cervix is tall than cow. Also uteruses of these two ruminants have communities and variation in histological characteristics (7).

Banks (1883) and Delmann (1993) reported which Uterus of ruminant has three layers, endometrium (contain tunica mucosa and tunica sub mucosa), myometrium (contain inner circular layer and outer longitudinal layer) and primetrium ( contain serousa or adventitia).

R. Hadek ( ) studied 60 uterus of ewe and he reported which ruminant uterus tissue have three layer, endometrium, myometrium and primetrium(3). H. Rashidi and et al ( ) reported which buffalo uterus has three layers, endometrium ,myometrium and primetrium as other mammals but the regions of uterus wall which had uterus teniae were observed as small projection on myometrium layer. They did not reported melanocytes in buffalo's uterus(7). Obtained results of this study were showed which uterus of buffalo have three layers, endometrium ,myometrium and primetrium, as other reports.

## References

1-Banks, W.J. (1883) Applied veterinary histology, Third edition, Mosby year book, London, England, PP; of  
 2-Delmann ,H.D. (1993) Text book of veterinary histology, Fourth edition, Lea and Febiger, Philadelphia, USA, PP;244—248.  
 3-Hadek R., ( ) Study of round pigment cell in uterus of the ewe. veterinary school , niversity of Glasgow.489-493.  
 4-Heydon R.A. and N.R. Adams (1979), Comparative morphology and mucus histolochemistry of the ruminant cervix: different between crypt and surface epithelium. Biology of reproduction. (21), 557-652.  
 5-Junqueira, L.C. J.Carneiro and J.A. Long (1992 ) Basic hitalogy, edition, Lang Medical Publication, Philadelphia,USA,PP;  
 6-Karimi, H.,H.A. Mahpeaker, A. Neamattollahi, R. Anvari.A. Fard moradnia and K. Niksan (2007) The study

Existents melanocyte is observed in lamina properia and tunica submucosa of Azerbaijan buffalo for fist time.

R. Hadek observed dark cells with small and large size in lamina properia and tunica submucosa of ewe. He believed which these cells are melanocytes and he suggested which these cells have a role as phagocytosis(3 ).

R. Shahrooz and et al (1998) performed as studies on uterus of Makooi ewe. They reported distribution of plasma cell and mast cells on different estrus cycle. Also they reported melanin pigments in lamina properia and tunica submucosa of Makooi ewe. But they did not suggested a function for these cells(8).

Srikandakumar, A.E. and et al (2001) studied histology of the femal reproductive tract of the Arabian camel. They observed three layers in uterus of this animals as other ruminant but they did not reported melanocytes in lamina properia and tunica submucosa of this animal uterus(9).

Observation and report melanocytes in lamina properia and tunica submucosa of Azerbaijan buffalo did not reported ego. Results of this research reported it for first time. Existence this cell in this tissue is rare and randomly probably. Function of melanocytes is unknown in this tissue yet and other researches need for understanding role of this cell in this tissue.

of important factor on production of Azebayjan buffalo (Bubalus Bubalis),J. of animal and veterinary advances,6(11),; 1296-1297.

7-Rashidi, H. Randjbar R. Mazaheri Y. ( )Macroscopic and microscopic study teniae in water buffalo.J.fac.Of Vet. Med.Univ.Of Tehran,Vol.51,No.1&2:49-57.

8-26Shahrooz R. and R.A. Sadrkhanloo (1999) Histomorphometrical and cytological study of sheep endometrium (Makoe ewes) During different stages oestrous cycle. .fac.Of Vet. Med. Univ. Of Tehran.(53)No.3 and 4,;31-38.

9-Srikandakumar, A.E. H.Jounson, O.Mahgoub,I.T.Kadim and D.S.Al-Ajmi. (2001). Anatomy and histology of the femal reproductive tract of the Arabian camel. Emir. J. Agric. Sci. (13):23