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Histochemical studies on the one humped camel's rectum (*Camelus dromedarius*)

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Abstract
For this work we used 6 rectum of recently died camel in VCC, CVAS, Bikaner. There were four layers in wall of rectum it include tunica mucosa, submucosa, muscularis and serosa. A more amount of loose connective tissue with various large and small blood vessels were present in rectum's submucosa. Outer longitudinal and inner circular layer was present in muscularis of rectum in which outer layer was thick and inner layer was thin. Retroperitoneal part conatied adventitia at outer most layer and peritoneal part had serosa as outermost layer in camel's rectum. A intense negative reaction was present in mcmanus for glycogen and muco-polysaccharides.

Keywords: Histchemical, one humped camel, rectum

Introduction
Tallest breed of camel is one humped camel according to Rolleson, 1991 [8]. Bikaneri breed of camel is the best breed of camel in world it is identified by brown clour which is daeker then Jaisalmeri. Jaisalmeri breed of camel is identified by light brown clour and light body and slim then bikaneri which is helpful in running. So we can say that Jaisalmeri camel uses in running.
Rectum is a site where feces are temporary present before defecation. Wall of rectum are thick and more extendable than the other part of digestive tract according to Raghavan, 1964 [7]. Lymphoid tissue which is present in rectum they seen as patches form in retum and jejunum these are part of digestive tract in humans as well animals. There payer's patches are found in camel's rectum mucous membrane according to Zhaxi *et al.*, 2014 [10].

Materials and Methods
For this work we uses six rectum of camel from vcc, cvas, Bikaner. Histochemical analysis was completed in dept. of vet. Anatomy cvas, Bikaner. Samples for this study was obtained from vcc just after the death of camel after the confirmation of owner. All the equipment and materials are provided by hod sir of department and my guide sir very helpful during all procedures of this research work.

Results and Discussion
Histochemical Observations
Mc-Manus's method for glycogen (PAS)
A moderate positive reaction was present in lining epithelium and lamina propria with mcmanus pas stain. . The results of the present study were in similar with Morales (1980) [5] in bovines, and sheep, goats, and cattle, and in camels by the al Samawy 2019 [1].
For carbohydrate tunica mucodsa submucosa muscularis and serosa showed intense positive reaction was present in the mcmanus pas stain, which shows in fig.1. The result of this work was similar to findings of Kadam *et al.* (2009) [3] in sheep, goat and in camels by al Samaway *et al*. 2019 [1].

McManus's method with saliva for glycogen (PAS)

A normal negative pas reaction was seen in outer epithelium, laminapropria and laminamuscularis, which we see in fig. 1 and 2. Results of this work similar to results of morales (1980) [5] in bovines, Kadam *et al*. 2009 [3] in goat and sheep.

A negative reaction was present for sugars in mcmanus pas with saliva when we stain outer epithelium lamina propria and mascularis of lamina of rectum wall. This negative reaction was present due to glycogen of cells digested by saliva of animal.

Different tissue of rectal wall's Muco polysaccharides with pas Alcian blue

At ph 1.0 reaction of pas alcian blue

A moderate positive reaction was present in outer epithelium when it was stained with pas alcian blue ph 1.0. A similar positive reaction was also seen in guinea pig and rabbit according to Sheahan and Jervis (1976) [9].

A strong positive reaction was present in lamina propria when it was stained with pas alcian blue ph- 1.0.

A red colour was seen lamina propria and laminamuscularis of rectal wall when it was stained with pas alcian blue ph- 1.0. The results of this work were similar with that of observations on guinea pigs and rabbit in of Sheahan and Jervis (1976) [9].

The sulfated mucous substance which is present in the goblet cells of rectum wall were showed a dark or intense blue colour when we stained it with pas alcian blue ph-1.0. Findings of this research work were in similar with the results of in humans by Filipe in 1969 [2].

A moderately positive reaction was present in tunica submucosa when it stained with pas - alcian blue pH-1.0.

A moderately positive reaction was present in tunica serosa to the pas- alcian blue pH- 1.0 stain. Results of this work similar to those of in guinea pigs, rabbits, and cat by Sheahan and Jervis (1976) [9].

Reaction of different tissue with pas Alcian blue at ph 2.5

The outer epithelium of rectal wall showed a positive rxn. When we stained outer epithelium with pas alcian blue ph 2.5. This findind was in similar with the results of Filipe (1969) [2] in humans.

A moderate positive reaction was present in lamina propria. Lamina muscularis of rectal wall showed a srong positive rxn. When it was stained with pas alcian blue ph- 2.5. Results of this work were in similar with the report on guinea pigs, and rabbit according to Sheahamn and Jervis in 1976 [9].

A intense blue color showed by goblet cells in when goblet cells were stained with pas alcian blue ph-2.5 which we seen in fig. 3 and 4. The result of this work were in similar with the findings in humans by fillip in 1969 [2].

A substance called Sulpho Mucoid substance which is present in goblet cells of rectum wall during this research work and these substance were present in more amount in rectal wall of cat.

A moderately positive reaction was present in tunica subnucosa to the this stain when we stained tunica submucosa with this stain.

A moderately positive reaction was seen in tunica serosa to the this stain when we used pas alcian blue ph 2.5.

Conclusion of this research work

This research work was done on 6 rectum of dead camel which is recently died in clinics of veterinary college Bikaner. This analysis tells us that all the layers of rectal wall was moderately positive reaction to pas stain when it was stained with this stain in laboratory of college. In this work we utilized 2 types of pas stain with 1.0 and 2.5 ph.

Commendation

All work of this research was done in laboratory of veterinary college Bikaner in department of anatomy. The authors of this research work are very thank full to head of department sir in anatomy for giving his guidance and support to complete this work. Authors are also greatfull to guide sir for his presence during all procedure of this histochemical analysis of camel rectum.

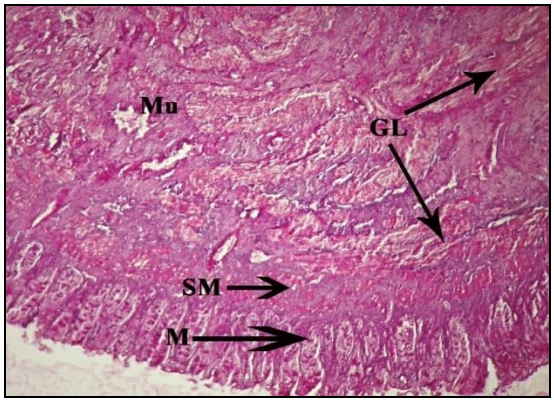

Fig 1: Camelrectum showing M- mucosa Mu- muscularis SM- submucosa and GL- glycogen with the McManus Method of pas for glycogen at 100x magnification.

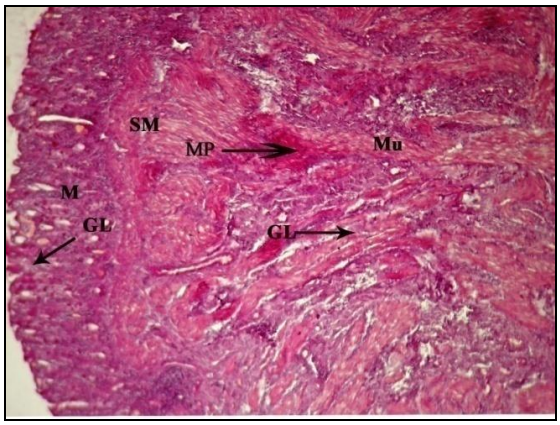

Fig 2: Camlelrectum presented SM. Sub mucosa, Mu. Mus cularis, GL. Glyco gen, MP- muc-opolysaccharides, M. mucosa. With the pAS with saliva stain with mucosubstance, 100x magnification.

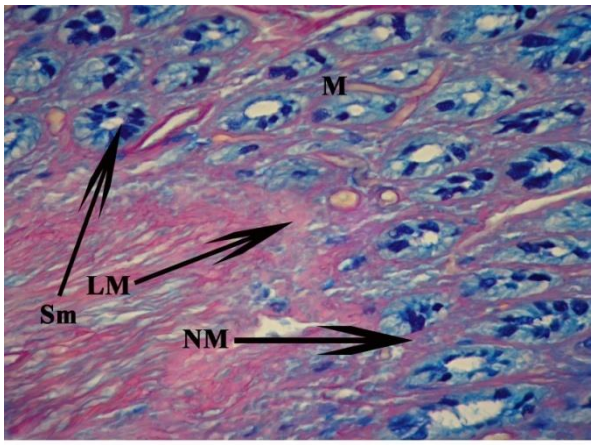

Fig 3: This photo showed camelsrectum nm- neutral muco-substance, S m- sulfated muco-substance, LM-lamina muscularis, M-mucosa. With pAS alcian blue stain for mucosubstance PH-2.5, 400x magnification.

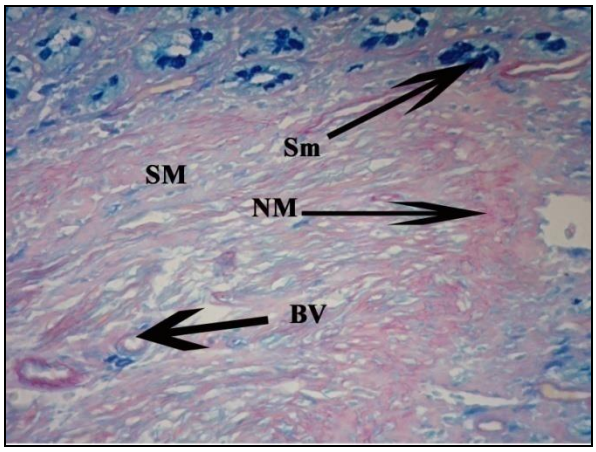

Fig 4: This photo showed camel's rectum showing SM- sub-mucosaSm- sulfated muco-substance and bv- Blood –vessels, nm-neutral muco-substance, in pas alcian blue stain for mucosubstance PH-2.5, at 400x magnification.

Conclusion

The tunica submucosa, tunica muscularis and tunica serosa showed an intense positive reaction for carbohydrates in the PAS stain. All layers of the rectum showed a negative reaction for glycogen in PAS with saliva stain.

Mucosubstances showed a moderate reaction in the lamina propria and lamina muscularis. The goblet cells of the rectum showed sulfated mucosubstances as an intense blue colour in the PAS- Alcian blue pH-2.5 stain. The tunica submucosa showed a moderately positive reaction to the PAS- Alcian blue pH- 2.5 stain. Tunica muscularis showed an intense positive reaction to the PAS- Alcian Blue pH- 2.5.

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