HISTOCHEMICAL STUDY OF PROSTATE GLAND IN UNCASTRATED AND CASTRATED CATTLE

N.S. Bhosle, R.K. Shingatgire and P.I. Kapadnis

College of Veterinary Sciences,
MAFSU, Parbhani - 431 402, India

ABSTRACT

For the present study prostate gland were obtained from twenty eight bull of Deoni breed and other non-descript breeds. PAS reaction was intense, glycogen granules, acid and neutral mucopolysaccharides, amyloids, lipid granules were moderate, nuclei were reactive for feulgen reaction and alkaline phosphatase activity was mild in bull. However, neutral acid mucopolysaccharides at corpora amylacea were intense. Acid mucopolysaccharide was mild. Feulgen reaction was intense and the alkaline phosphatase activity was reduced in castrated male.

INTRODUCTION

A very meager information is available on histochemical aspects of male accessory sex glands in cattle particularly before and after castration. Such type of study may reveal histochemical changes produced under the adverse secretion of testosterone created by castration, confirming the importance and key role of testosterone in the structural and functional development of accessory sex glands in cattle. Hence the present study was undertaken to explore the histochemical studies of prostate gland in uncastrated and castrated cattle.

MATERIAL AND METHODS

For the present study prostate gland part of corpus and pars disseminated were obtained from twenty eight bull of Deoni breed and other non-descript breeds. Out of twenty eight animals fourteen were uncastrated and fourteen were castrated.

The tissue pieces of 5 mm thickness were collected from prostate gland and fixed in 10% formalin. Routine paraffin embedding method was followed to process the tissues and sections were cut at 5 m thickness and stained with following methods:

1. Demonstration of Mucin
   1. Hughesdon’s Metachromatic Method (Smith and Bruton, 1977)
   2. Steedman’s Alcian blue (Smith and Bruton, 1977)

2. Demonstration of Glycogen
   1. Best’s carmine (Smith and Bruton, 1977)
   2. McManus Periodic Acid Schiffs (PAS) reaction (Mukharjee, 1990)

3. Demonstration of Mucoprotein, Neutral and acid mucopolysaccharides
   1. PAS Alcain blue method pH 2.5 (Singh and Sulochana, 1978)
   2. Modification of Mowry’s Collodial iron (Singh and Sulochana, 1978)

4. Demonstration of Amyloids
   1. Benhold’s Congo Red (Mukharjee, 1990)
   2. Toluidine blue (Mukharjee, 1990)

5. Demonstration of Calcium
   1. Von Kossa silver nitrate (Mukharjee, 1990)

6. Demonstration of lipids on frozen sections
   1. Sudan black - B (Singh and Sulochana, 1978)
   2. Oil Red ‘O’ in propylene glycol method (Singh and Sulochana, 1978)

7. Demonstration of nucleic acid (Feulgen reaction for DNA (Singh and Sulochana, 1978)

8. Demonstration of alkaline phosphatase (Frozen sections) Gomori’s alkaline phosphates cobalt method (Singh and Sulochana, 1978)
RESULTS AND DISCUSSION

Prostate gland of Bull

In the present study, PAS reaction revealed intense positive reactions at the basement membrane, luminal border of the epithelial cells, interstitial tissue, capsule (Fig. 1.) and stroma. However, Stallcup (1969) observed moderate PAS reaction and Kainer et al. (1969), Mouly (1971) and Pal and Bharadwaj (1993) observed PAS positive granules in the prostate gland of buffalo bull. The acid and neutral polysaccharides were mild to moderate (Fig. 2). However, Mouly (1971) and Pal and Bharadwaj (1993) observed intense alcian blue reaction in epithelial lining in buffalo bull. The glycogen content was moderate contrary, Moussa et al. (1983) reported the absence of the glycogen in the prostate gland of buffalo bull. The sudanophilic lipid were found in moderate amount in cell contrary, Moussa et al. (1983) reported absence of lipids in buffalo bull prostate. The nuclei showed moderate to intense Feulgen reaction as reported earlier by Pal and Bharadwaj (1993) in buffalo bull. The mild reaction for amyloids and negative for calcium was observed in epithelium. The alkaline phosphatase reaction was mild as reported
earlier by Rollinson (1954) and Stallcup (1969) in bull and Moussa et al. (1983) in buffalo bull. 

**Prostate gland of castrated cattle**

The reaction for neutral mucopolysaccharide showed intense positive reaction at the luminal border of epithelial lining of alveoli secretory material in the lumen of alveoli which was in agreement with Gupta and Singh (1982) (Fig. 3) in 20 and 30 days postcastrated goats. Reaction indicated was moderate for glycogen (Fig. 4) contrary Gupta and Singh (1982) reported the absence of glycogen in the prostate gland of 20 and 30 days of post castrated goats.

Acid mucopolysaccharide was absent in prostate epithelium as reported by Gupta and Singh (1982) in 20 and 30 days of postcastrated goats. Lipid granules were observed in moderate amount in the basal cells of the epithelium in present study while Gupta and Singh (1982) reported that the lipid material was absent in castrated goats. There was mild reaction for acid mucopolysaccharides at basement membrane, epithelial cells and intense at corpora amylacea, mild reaction for amyloids and intense Feulgen reaction in the nuclei recorded in the present study could not be compared for non availability of observations in the literature. The alkaline phosphatase reaction was not observed in present study, however Gupta and Singh (1982) reported that the alkaline phosphatase activity was reduced with the advancement of castration period in goats.

REFERENCES