Comparative histochemical studies of lacrimal gland in Ruminants

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ABSTRACT
The present study was carried out to observe the histochemical details of the lacrimal gland in ruminants. The lacrimal gland located at the dorsolateral aspect of the eyeball which helps to nourish the cornea. In the present study a strong PAS positive reaction were seen in the secretory units of lacrimal gland in cattle, sheep and goat whereas, few secretory units showed strong PAS positive reaction and few secretory units showed weak PAS positive reaction in buffalo. Few secretory units and few secretory cells in some secretory units showed positive reaction for Alcian blue at (pH 2.5) in cattle, buffalo, sheep and goat. Intralobular and interlobular lipids were observed in buffalo, sheep and goat.

Key words: Histochemistry, Lacrimal gland, Lipids, PAS.

The lacrimal glands are unique structures possessing both epithelial and lymphoid tissue and may fall prey to an unusually wide range of pathogens because the cornea is a wet, warm surface and thus is an ideal pathway for pathogens to invade the body and to affect the cornea. The present study was taken up to correlate the histochemical differences among ruminants.

The lacrimal glands were collected from the dorsolateral aspect of eyeball of cattle, buffalo, sheep and goat. Six samples from each species were collected from slaughter house immediately after slaughter. The samples were fixed in 10% neutral buffered formalin, processed by isopropyl alcohol-xylene sequence and embedded in paraffin by routine method. The sections were cut at 5-6µ and were stained with PAS technique for muco polysaccharides (Bancroft et al. 2008), Alcian blue (pH 2.5) for sulphated sulfomucins and sialomucins (Bancroft et al. 2008). The glandular tissue fixed in Neutral buffered formalin were pre-frozen for 1-2 hours and embedded in freezing media, using cryostat 6-7 µ thickness sections were cut and were stained with Oil red O for lipids (Luna 1968).

In the present study a strong PAS positive reaction was seen in the secretory units of lacrimal gland in cattle, sheep and goat indicating the presence of high amount of neutral glycoproteins (Fig -1). This finding is similar to the earlier reports of Mohammadpour (2011) in camel and Abbasi et al. (2014) in sheep. Whereas, Gargiulo et al. (2000) observed a strong PAS positive reaction in mucous cells and weak PAS positive reaction in seromucous cells in sheep. Kleckowska et al. (2012) observed PAS positive reaction in few secretory cells whereas, most of the cells did not show any reaction for PAS in Roe deer indicating the variation in the secretory nature of the cell. In the present study few secretory units showed strong PAS positive reaction and few secretory units showed weak PAS positive reaction in buffalo. Few secretory units and few secretory cells in some secretory units showed positive reaction for Alcian blue at (pH 2.5) in cattle, buffalo, sheep and goat. Intralobular and interlobular lipids were observed in buffalo, sheep and goat.

In the present study few secretory units and few cells in some secretory units were positive for Alcian blue at (pH 2.5) in cattle, buffalo, sheep and goat indicating the presence of sulfomucins and sialomucins (Fig-3). Whereas, Gargiulo et al. (2000) reported that mucous and seromucous cells showed moderate reaction for Alcian blue at (pH 2.5) and (pH 1.0) in sheep revealing the presence of acidic glycoconjugates. However, Pinard et al. (2003) in bison and cattle reported that the acinar cells were positive for Alcian blue at (pH 1.0) and (pH 2.5) whereas, the tubular cells did not show any reaction. Maala and De ocampo (2007) in buffaloes observed that the PAS positive reaction in most of the secretory acini, the reason may be due to breed and regional variations.

In the present study lipid granules in the cytoplasm were not observed. It differs with the earlier reports of Singh et al. (1975) where diffuse cytoplasmic sudanophilia was observed in buffaloes, and Trautmann and Fiebiger (2002) reported the presence of fat droplets in the
secretory cells of all domestic animals. However, in the present study the intralobular and interlobular lipids were observed in buffalo, sheep, and goat (Fig 4,5). In the present study all the ducts of cattle, buffalo, sheep and goat showed negative reaction for PAS. However, the goblet cells in the interlobular ducts of sheep and goat showed strong PAS positive reaction (Fig 6). This finding was in accordance with Garguilo et al. (2000) in sheep, Abbasi et al. (2014) in sheep.


