C

Short Communication

Haryana Vet. (June, 2018) **57 (1)**, 108-109

HISTOENZYMIC STUDIES ON PROVENTRICULUS OF POST HATCH UTTARA FOWL

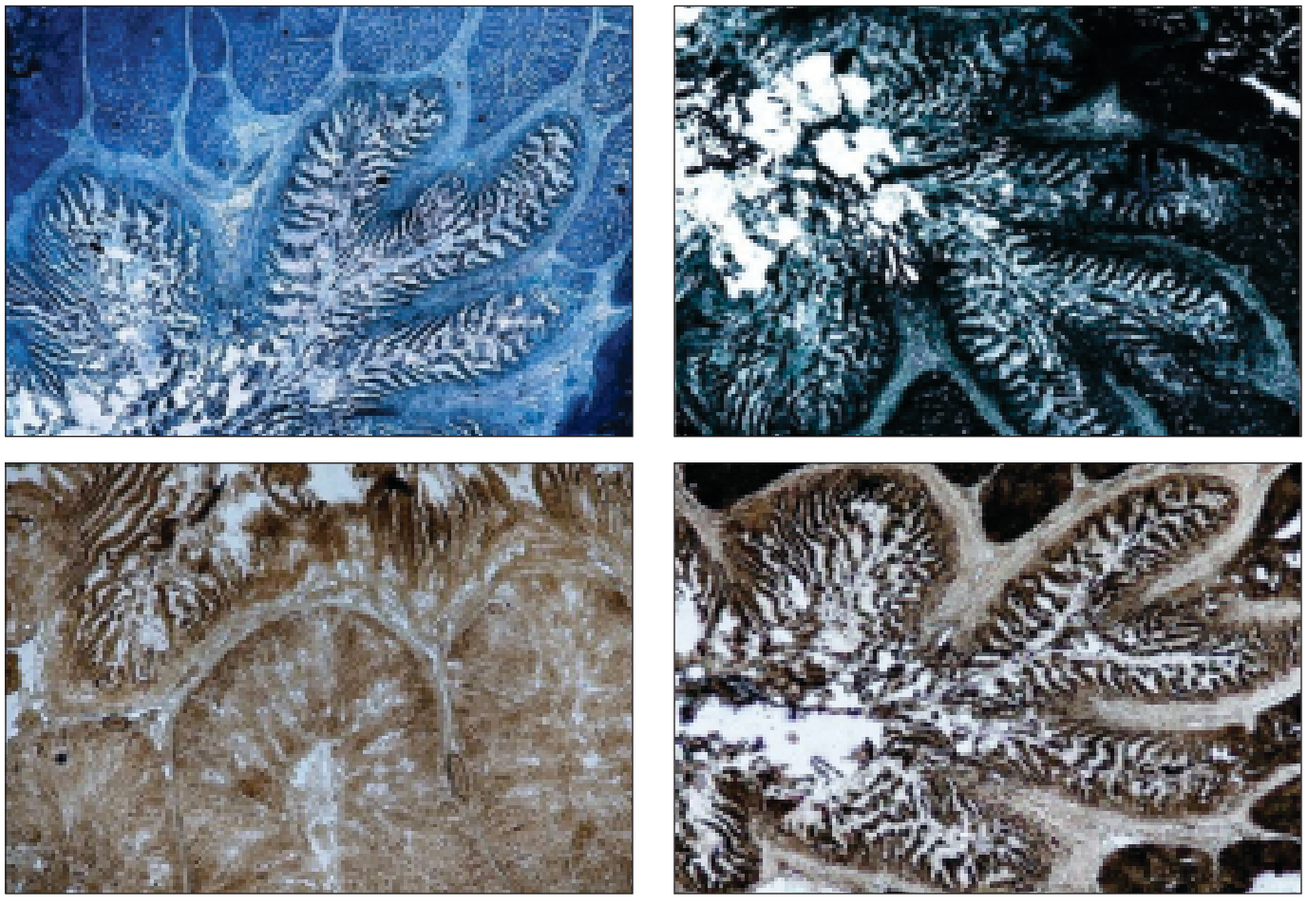
RUPAM SINHA
Department of Veterinary Anatomy, College of Veterinary and Animal Sciences,
GBPUAT, Pantnagar - 263145, India

SUMMARY

The study was performed on 24 birds; six birds each were utilized for studying histoenzymic studies at 0, 7 days, 28 days and 112 days old of age intervals. In all age groups of birds, the proventricular mucosal epithelium showed strong positive reaction while reaction in tunica submucosa and tunica serosa was not much appreciable for alkaline phosphatase while in acid phosphatase, strong positive reaction was observed in the glandular epithelium but the mucosal epithelium showed very weak positive reaction. For glucose -6- phosphatase, in all the age group of birds, moderate activity was noticed in the apical portion of the surface epithelium cells, glandular epithelium, tunica muscularis and tunica serosa of proventriculus. For adenosine tri phosphatase in all age groups of birds, weak to moderate activity was noticed in the apical portion of the mucosal epithelial cells and in glandular epithelium.

Key words: Uttara fowl, proventriculus, alkaline phosphatase, acid phosphatase, glucose -6- phosphatase, adenosine tri phosphatase

In spite of many nutritional reports on avian stomach functions, relatively little is known about the detailed histoenzymic appearance of the proventriculus surface. Although Das (2010) and Vaise *et.al*. (2006) studied histoenzymic structure and age related changes in certain organs of digestive system of guinea fowl, Japanese Quail respectively, but the histoenzymic studies of the proventriculus of Uttara fowl have not been studied so far. Hence, the present work was undertaken for the



Figs.1-4. 1. Photomicrograph showing AKPase activity (→) in the mucosal epithelium of proventriculus in 0 days old Uttara Fowl (Alkaline phosphatase X40). **2.** Photomicrograph showing very weak ACPase activity (→) in the mucosal epithelium of proventriculus of 0 days old Uttara Fowl (Acid phosphatase X40). **3.** Photomicrograph showing Glucose - 6 Phosphatase activity (→) in the mucosal epithelium and tunica submucosa of proventriculus in 28 days old Uttara Fowl (Glucose 6 Phosphatase X40). **4.** Photomicrograph of proventriculus showing ATPase activity (→) in the mucosal epithelium and proventricular glands of 0 days old Uttara Fowl (Adenosine tri Phosphatase X40).

*Corresponding author: rupam5227@gmail.com

promotion and advancement of anatomical knowledge on the proventriculus of Uttara fowl.

The present study was conducted on 24 birds of Uttara fowl birds in the Department of Veterinary Anatomy, College of Veterinary & Animal Science, G. B. Pant University of Agriculture & Technology, Pantnagar. On the basis of age, the birds were divided into four group with six in each age group comprising of 0 day, 7 day, 28 day and 112 days old. The tissues from proventriculus and gizzard were collected and immediately frozen in liquid nitrogen for histoenzymic studies. These pieces were cut in 10µ thickness using cryostat (Leica, Germany) at -20ºC. Triplicate sections of each tissue sample were used for localization of alkaline phosphatase, acid phosphatase, glucose-6- phosphatase, adenosine triphosphatase. Immediately after that staining slides were observed under microscope and results were interpreted as strong, moderate, weak or no activity for particular enzyme.

In proventriculus of all age groups, strong positive reaction for alkaline phosphatase was observed in mucosal epithelium while reaction was not much appreciable in tunica submucosa and tunica serosa (Fig.1) as recorded in Kadaknath fowl (Das, 2010); guinea fowl (Selvan *et al.,* 2008); pullet (Bhattacharya *et al.,* 1994) and fowl (Suganuma *et al*., 1981) for alkaline phosphatase. For acid phosphatase in proventriculus of all age groups, a strong positive reaction was observed in the glandular epithelium but the mucosal epithelium showed weak positive reaction (Fig. 2). Similar findings had also been reported in Kadaknath fowl (Das, 2010); in guinea fowl (Selvan *et al.,* 2008) and in pullets (Bhattacharya *et al.,* 1994). For Glucose -6- Phosphatase in all the age groups, moderate activity was noticed in the apical portion of the surface epithelial cells (Fig.3), glandular epithelium, tunica muscularis and tunica serosa of proventriculus. These findings were similar to the findings reported in proventriculus of Kadaknath fowl (Das, 2010). The activity of adenosine tri phosphatase in proventriculus of all age groups was weak to moderate noticed in the apical portion of the mucosal epithelial cells (Fig. 4) and in glandular epithelium as reported in guinea fowl (Selvan *et al.,* 2008) and in pullets (Battacharaya *et al*., 1994).

REFERENCES

Bhattacharya, M., Mukit, A., Goswami, S. and Bordoloi, C. C. (1994). Histoenzymic study on the proventriculus of pullets. *Indian Vet. J.* **71(4):**355-359.

Das, S. (2010). Gross, histological, histochemical and ultrastructural studies on proventriculus and gizzard of *Kadaknath fowl*. Thesis, G.B.P.U.A.T., Pantnagar (Uttarakhand).

Selvan, P. S., Ushakumary, S. and Ramesh, G. (2008). Studies on the histochemistry of the proventriculus and gizzard of post hatch Guinea fowl *(Numida meleagris)*. *Int. J. Poult. Sci.* **7(11)** 1112-1116.

Suganuma, T., Katsuyama, T., Tsukahara, M. and Sakakura, Y. (1981). Comparative histochemical study of alimentary tract with special reference to mucous neck cells of stomach. *Am. J. Anat*. **161**: 219-238.

Vaish, M. K., Parmer , M. L., Taluja, J. S. and Vaish Rakhi (2006). Histological observation on the large intestine of post hatch Kadaknath Fowl. In "Souvenir and Abstracts." XX Annual Conventional of Indian Association of Veterinary Anatomists and National Symposium held on 27-29 Jan., 2006 at Jabalpur. pp.54.