Cytochemical and Cytoenzymic Studies on Blood Cells of Pig

Suresh Mehta*, Ishwar Singh and Meena Mrigesh
Department of Veterinary Anatomy, Ranchi Veterinary College
Birsa Agricultural University, Kanke, Ranchi-834 006 (Jharkhand)

Received: 24 July 2012; Accepted: 01 October 2012

SUMMARY

Cytochemical and cytoenzymic studies were carried out on the blood cells of ten apparently healthy pigs of 1-2 years of age. Erythrocytes did not exhibit any reaction when stained with acid ferrocyanide stain. The lymphocytic cytoplasm exhibited intense red fluorescence as compared to granulocytes. Nuclear DNA stained orthochromatically greenish yellow whereas, cytoplasmic RNA stained metachromatically red when stained with supravital stain. The lymphocytes also showed intense reaction when stained with methyl green-pyronin stain. The neutrophils showed intense positive reaction for cytochrome oxidase, weak to negative reaction for aminopeptidase and arylsulfatase. The eosinophils showed strong positive reaction for arylsulphatase while leukocytes showed positive reaction for succinate dehydrogenase.

Key words: Blood cells, Cytochemical, Cytoenzymic, Pig

The cytochemical and cytoenzymic studies of the blood cells are very useful in diagnosis of various diseases. The identification of the cells and localization of various enzymes in them is of great importance in understanding body response to any kind of stress and diseases. The cytochemistry of blood cells has been documented in buffalo calves (Singh, 2000). Inspite of large quantum of literature available on domestic animals, the reports on cytochemical and cytoenzymic studies on blood cells of pig are meager. Hence, the present study was conducted because of importance and its application in various fields of veterinary sciences.

The study was conducted on ten apparently healthy Large White York Shire pigs of 1-2 years age, maintained at Livestock Production and Management Farm of College of Veterinary Sciences, G.B.P.U.A.T., Pantnagar. The blood samples were collected from ear vein of pig and transferred to test tubes containing EDTA as an anticoagulant. The smears were prepared immediately on grease free slides. The blood smears were stained with acid ferrocyanide stain for iron (Jain, 1986), supravital stain of Wittekind as well as methyl green-pyronin for DNA and RNA, cytochrome oxidase, aminopeptidase, arylsulphatase and succinate dehydrogenase (Bover, 1964). The stained blood smears were examined under oil immersion to record the cytochemical and cytoenzymic activity in different blood cells.

The nuclear DNA stained orthochromatically greenish yellow whereas, cytoplasmic RNA stained metachromatically red when stained with supravital stain and observed under fluorescent microscope. The cytoplast of lymphocyte exhibited intense red fluorescence as compared to granulocytes as reported in camel (Singh et al., 1998) and buffalo calves (Singh, 2000).

The lymphocytes also showed intense reaction when stained with methyl green-pyronin stain. The nuclear DNA stained blue while cytoplasmic RNA stained carnation red (Fig. 1) as observed by Bover (1964). Erythrocytes did not exhibit any reaction when the blood smear was stained with acid ferrocyanide stain. Whereas, Singh (2000) reported that few erythrocytes of buffalo calves showed blue coloured fine granules. The succinate dehydrogenase enzyme activity was concentrated usually at one pole of the cytoplast of lymphocytes and monocytes while in granulocytes it was less marked. Jain (1986) stated that basophils showed positive reaction for succinate dehydrogenase. Singh (2000) reported that the dehydrogenase activity was positive in lymphocytes of buffalo calves. The neutrophils showed very weak to negative activity whereas, other leukocytes were negative...
for the aminopeptidase. The neutrophils showed intense positive reaction in the form of blue coloured patches in the cytoplasm when stained for cytochrome oxidase (Fig. 2). Singh (2000) stated that the eosinophils of buffalo calves showed positive reaction. The eosinophils showed strong positive reactivity in the form of brown coloured granules when blood smears were stained for arylsulphatase (Fig. 3). The granules of neutrophils, lymphocytes and monocytes did not exhibit any reaction with arylsulphatase. However, Singh (2000) stated that in buffalo calves the granules of neutrophils showed positive reaction for arylsulphatase.

**REFERENCES**


