

Cytochemical Studies on the Blood Cells of Kadaknath Fowl**Gulab Chandra Yadav¹ and Ishwar Singh^{2*}**Department of Veterinary Anatomy, College of Veterinary and Animal Sciences
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SUMMARY

The present study was conducted on the blood cells of ten apparently healthy Kadaknath fowls. The granules of basophils were stained metachromatically when stained with 1% toluidine blue stain for mucopolysaccharides. Black coloured Sudanophilic granules were observed in the cytoplasm of the eosinophils. Glycogen in the form of light pinkish violet coloured granules was demonstrated by periodic acid Schiff's stain only in the eosinophils. Acid ferrocyanide stain showed positive reaction in the form of fine blue coloured granules in siderocytes.

Key words: Blood cell, Cytochemistry, Diagnostic significance, Fowl

The blood examination is an important tool to access general health and diagnosis of various diseases. The metachromatic reaction of toluidine blue was used to evaluate immature basophil population and myeloproliferative disease in human beings (Parwaresch, 1976). The pattern of acid Schiff's stain reactivity was used to characterize lymphocytic leukemias (Schwarze, 1980). The paucity of literature led to initiate the present cytochemical studies on blood cells of Kadaknath fowl.

The blood was collected aseptically from wing vein of ten apparently healthy Kadaknath fowls and the blood smears were fixed in absolute methanol for 5 minutes. The blood smears were stained with 1% toluidine blue for acid mucopolysaccharides, acid ferrocyanide stain for iron (Bover, 1964), Sudan black B stain for lipid and periodic acid Schiff's stain for glycogen (Jain, 1986).

The granules of basophil stained metachromatically in the form of intense violet coloured with 1% toluidine blue for mucopolysaccharides (Fig. 1) as reported by Gupta *et al.* (2010) in guinea fowl. Yokohama (2002) reported that the intensity of toluidine blue was increased in chronic myeloproliferative disorders whereas, decreased in case of myeloid leukemia.

The eosinophils (Fig. 2) showed strong positive reaction in the form of intense black coloured granules when stained with Sudan black B whereas, the lymphocyte

and monocyte did not show any reaction as reported by Gupta *et al.* (2010) in guinea fowl and Andreasen and Latimer (1990) in fowl. Jain (1986) observed that the affinity of Sudan black B in neutrophils and eosinophils was increased in myeloblastic leukemia without maturation, myeloblastic leukemia with maturation and monocytic leukemia whereas, lymphoid malignancies lacked positive reaction. The eosinophils showed weak PAS positive reaction in the form of light pinkish violet coloured granules in the cytoplasm. In contrast, a strong PAS positive reaction has been observed in eosinophils of guinea fowl (Gupta *et al.*, 2010) however, heterophils showed negative reaction in chicken (Andreasen and Latimer, 1990). Schwarze (1980) observed that the pattern of cytoplasmic PAS reactivity can be used to characterise lymphocytic leukemias.

Siderocytes showed fine blue coloured granules

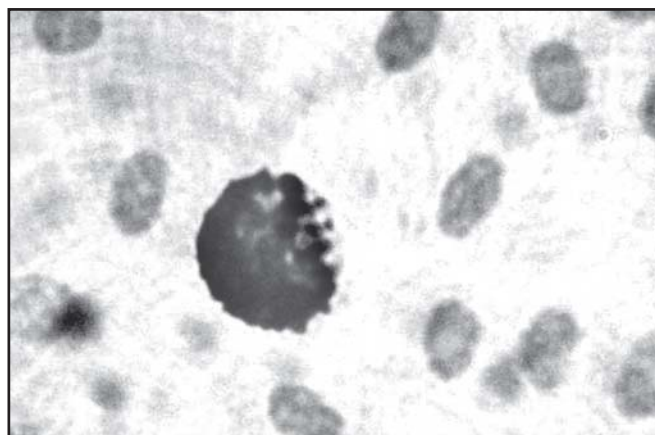


Fig. 1. Photomicrograph of blood smear showing basophil with metachromatically stained granules. Toluidine blue stain × 1000

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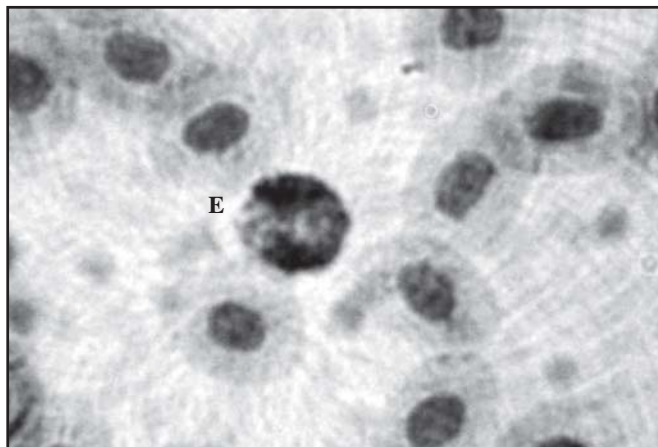


Fig. 2. Blood smear showing intense Sudanophilia in eosinophil (E).
Sudan black B \times 1000

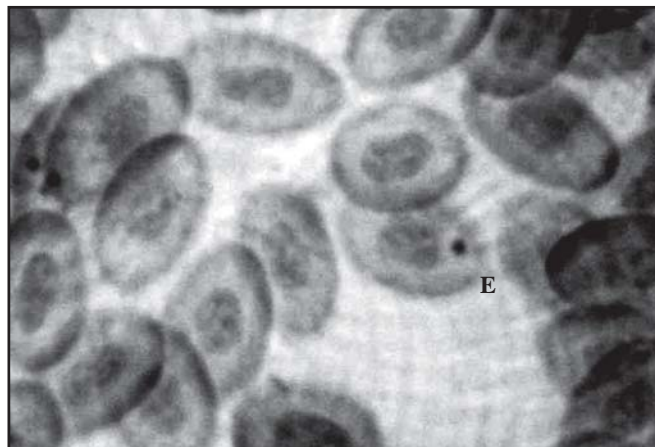


Fig. 3. Blood smear showing an erythrocyte (E) with blue coloured granule.
Acid ferrocyanide stain \times 1000

with acid ferrocyanide stain (Fig. 3) as reported by Gupta *et al.* (2010) in guinea fowl. Harvey (2001) observed that normal/excess iron might be observed in animals with hemolytic anemia resulting from decreased erythrocyte production. Siderocytes were rare or absent in blood of normal animal but might occur when there was lead toxicity, hemolytic anemia, dyserythropoiesis, myeloproliferative disease etc.

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