VETERINARY SCIENCE RESEARCH JOURNAL
olume **9** | Issue 1&2 | April & October, 2018 | 15-17

☞ DOI : 10.15740/HAS/VSRJ/9.1and2/15-17
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RESEARCH ARTICLE

Comparative cytomorphological studies on monocytes of domestic fowl, duck and quail

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Abstract : The present study was conducted on blood cells of thirty healthy domestic fowl, duck and quail, ten birds of each group. Monocytes were rounded in fowl and quail whereas rounded to elliptical in duck. Their mean diameter were 9.78 ± 0.11μm in fowl, 8.78 ±0.14μm in duck and 10.02 ± 0.15 μm in quail. In fowl, the nucleus was highly variable and ranged from spherical to oval in shape. The darkly stained chromatins were homogeneously distributed. The cytoplasm was foamy in appearance due to presence of large number of vacuoles. In duck, the nuclei were mostly horse shoe shaped and centrally placed. The light and darkly stained chromatin materials were in the form of intermingled patches. The cytoplasm was lightly stained In quail, the nuclei were curved, mostly horseshoe shaped and eccentrically placed.

Key words : Blood cells, Monocytes, Domestic fowl, Duct, Quail

How to cite this paper : Shalini, Saumya, Mehta, Suresh and Sinha, Rupam (2018). Comparative cytomorphological studies on monocytes of domestic fowl, duck and quail. *Vet. Sci. Res. J.*, **9**(1&2) : 15-17, **DOI : 10.15740/HAS/VSRJ/9.1and2/15-17**.

Paper History : Received : 20.12.2017; Revised : 14.09.2018; Accepted : 23.09.2018

INTRODUCTION

Monocytes are the largest leucocytes in the blood cells. They transiently circulate in the peripheral blood, exiting the vasculare either randomly or in response to an inflammatory stimulus. Cytomorphological aspect of monocytes in Muscovy duck (Sulaiman *et al.,* 2010) have been documented however comparative studies in different species of birds is meagerly available. Hence, present study was conducted explore its application in various field of veterinary sciences.

RESEARCH METHODOLOGY

The blood samples were collected using 2ml syringe with 22 gauze needle from wing vein of ten healthy domestic fowl, duck and quail maintained at Department of Veterinary Anatomy and Histology, Ranchi Veterinary College, BAU, Kanke. Immediately after collection blood was transferred to siliconized tube containing EDTA as anticoagulant. Immediately after collection, the blood samples were brought to the laboratory and smears were prepared on grease free slides. Blood films were stained with the, May Grunwald Giemsa stain (Bover, 1964). The stained blood smears

were examined under oil immersion objective (100 x) lens to record the results. The motic research microscope was used to record the dimension of different cells.

RESULTS AND DISCUSSION

Monocytes were rounded in fowl (Fig. 1), rounded to elliptical in duck (Fig. 2) and roughly round in quail (Fig. 3). Their size was 9.78 ± 0.11µm in fowl, 8.78 ±0.14 µm in duck and 10.02 ± 0.15 µm in quail. Bounous and Stedman (2000) pointed that the chicken and turkey monocytes usually were the largest leukocytes (approximately 14 µm in diameter). Campbell (2000) examined the monocytes in peripheral blood films of psittacine birds as the largest leucocyte. In fowl, the nucleus was highly variable and ranged from spherical to oval in shape. The darkly stained chromatins were homogeneously distributed. The cytoplasm was foamy in appearance due to presence of large number of vacuoles when stained with MGG (Fig. 1). In duck, the nuclei were mostly horseshoe shaped and centrally placed. The light and darkly stained chromatin materials were in the form of intermingled patches. The cytoplasm was lightly stained with MGG (Fig. 2). In quail, the nuclei were curved, mostly horseshoe shaped and eccentrically placed. The light and darkly stained chromatin material were in the form of intermingled patches. The cytoplasm was foamy in appearance with few vacuoles and granular dots. The cytoplasm stained light pink in colour when stained with MGG (Fig. 3). Jain (1993) reported that in avian species the monocytes the nuclei were usually round or oval in shape, however few elongated nuclei with indentation on one side were also seen. Their cytoplasm was usually abundant and frequently vacuolated or foamy. Deldar (1998) observed that the avian monocytes had pleomorphic nuclei which appear spherical, ovoid, elongated and indented. Their cytoplasm is relatively abundant, foamy and occasionally vacuolated with no visible granules. The cytoplasm was abundant, stained lightly, grey blue and was foamy in appearance. Monocytes at times had large vacuoles. Contrary to this finding, Thrall *et al*. (2004) observed that the avian monocytes had abundant blue-gray cytoplasm containing vacuoles and fine-dust like eosinophilic granules. The monocytes nucleus varied in shape and with less chromatin clumping compared with lymphocyte nuclei. Kaufman and Murray (2008) stated that avian monocytes had round to bi-lobed nuclei. The cytoplasm of monocytes stained blue-gray with a finely granular appearance and occasionally contained vacuoles. Bonadiman *et al.* (2009) found that ostrich monocytes, had rarer granules, less condensed chromatin, and a lower nucleus: cytoplasm ratio than lymphocytes. Claver and Quaglia (2009) observed that avian monocyte had a kidney-shaped nucleus. The cytoplasm was generally deep blue or grayish blue, often presented a pink- or purple-stained granular area near the nucleus. Sulaiman *et al.* (2010) stated that the in Muscovy ducks, the nucleus of the monocytes was kidney shaped or oval and the cells had light basophilic cytoplasm.

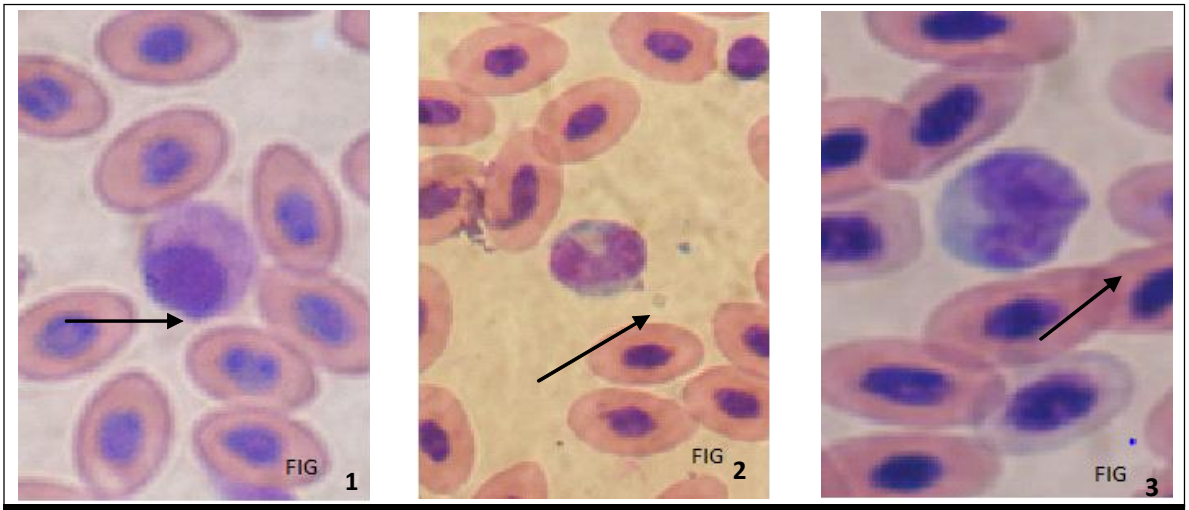

Fig. 1, 2 and 3 Photomicrograph of blood smear showing a monocyte of domestic fowl, duck and quail, respectively May Grunwald Giemsa stain x 1000

Acknowledgement :

Author's are thankful to Hon'ble Vice-Chancellor, Birsa Agriculture University, Dean, Ranchi Veterinary College, B. A. U, Ranchi, Jharkhand for financial assistance to carry out this research.

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