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SEASONAL VARIATION IN HAEMATOLOGICAL PARAMETERS OF DUTTAPHRYNUS MELANOSTICTUS

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ABSTRACT The present study evaluated seasonal variation in haematological parameters of Duttaphrynus melanostictus. The total erythrocyte count, total leukocyte count and haemoglobin percentage were found to be highest in rainy season and lowest in winter season. No major variation found in lymphocyte, monocyte, neutrophil and eosinophil count. Number of basophil increased in winter with lowest value in rainy season.

KEYWORDS : Haematological Parameters, Seasonal Variation, Duttaphrynus melanostictus

Introduction

Blood circulation and immune systems are fully established in anurans. They are a diverse group of vertebrates in terms of their blood parameters because they are poikilothermic.

Numerous elements, such as species, season, and state of health, influence the blood parameters of amphibians (Zhelev et al. 2016). Being highly differentiated and a reactive internal medium, blood reflects all alterations in its functional state, which are connected to alterations in its fundamental characteristics in response to environmental influences (Davis et al. 2008). The present study was aimed at finding seasonal variation in haematological parameters of Duttaphrynus melanostictus.

Materials and method

Blood was drawn by means of cardiac puncture using a heparinized needle. The blood samples collected were subjected to haematological analysis for haemoglobin, total erythrocyte count, total leukocyte count, differential leukocyte count and to measure the shape and size of different blood cells. Blood cell counts were carried out by means of Neubauer's haemocytometer. Both Red blood corpuscles (RBC) and White blood corpuscle (WBC) count were determined by visual haemocytometer method.

Results

Total erythrocyte count was found to be 0.676 + 0.08248, 0.793 + 0.04922, 0.523 + 0.04595 X106 mm3 in summer, rainy and winter respectively. There is a significant variation [F (2, 27) = 48.500, P = 0.000] observed in adult D. melanostictus. It is revealed that total erythrocyte count found to be highest in rainy and lowest in winter.

Total leukocyte count was found to be 18.645 + 1.15336, 21.55 + 1.569501, 17.54 + 0.94363 X103 mm3 in summer, rainy and winter respectively. There is a significant variation [F (2, 27) = 48.500, P = 0.000] observed in adult D. melanostictus. It is revealed that total leukocyte count found to be highest in rainy and lowest in winter.

Haemoglobin percentage was found to be 9.4 + 1.07082, 10.4 + 0.62538, 6.92 + 0.54324 in summer, rainy and winter respectively. There is a significant variation [F (2, 27) = 52.542, P = 0.000] observed in adult D. melanostictus. It is revealed that total haemoglobin percentage found to be highest in rainy and lowest in winter.

Number of lymphocytes were found to be 34.2 + 1.4757, 35.9 + 0.9944, 34.6 + 1.5055 in summer, rainy and winter, respectively. There is a significant variation [F (2, 27) = 4.362, P = 0.023] observed in number of lymphocytes of adult D. melanostictus. Number of monocytes were found to be 7.9 + 0.7378, 8.5 + 0.5270, 8.1 + 0.7378 µm in summer, rainy and winter, respectively. There is no significant variation [F (2, 27) = 2.049, P = 0.148] observed in number of monocytes of adult D. melanostictus. Number of neutrophils were found to be 30.9 + 0.7378, 31.4 + 0.6992, 31.3 + 0.9486 µm in summer, rainy and winter, respectively. There is no significant variation [F (2, 27) = 1.086, P = 0.352] observed in number of neutrophils of adult D. melanostictus. Number of eosinophils were found to be 15.4 + 0.8432, 15.5 + 0.8498, 15.1 + 0.7378 µm in summer, rainy and winter, respectively. There is no significant variation [F (2, 27) = 0.657, P = 0.526] observed in number of eosinophils of adult D. melanostictus. Number of basophils were found to be 5.8 + 0.4216, 5.7 + 0.4830, 6.4 + 0.6192 µm in summer, rainy and winter, respectively. There is a significant variation [F (2, 27) = 4.778, P = 0.017] observed in number of basophils of adult D. melanostictus.

Discussion

Peak total erythrocyte count was found during rainy weather and declined throughout the winter. RBC count showed seasonal change, with the count being higher in the winter than the rainy season. The highest and lowest total leukocyte counts were recorded during rainy and winter season, respectively. Haemoglobin percentage was peaked in rainy and declined in winter season. Lymphocyte count was peaked in rainy season and declined in summer season which is contradictory to the observation of Campbell (2004) and Chung et al (2009). Highest monocyte count were reported in rainy season. Yang et al (2014) reported higher monocyte count in summer in Asian yellow pond turtle (Ocadia sinensis) and in winter in case of yellow- marginated box turtle (Cuora flavomarginata). Neutrophils were most numerous in the present study in rainy season. Eosinophil count was found to be highest in rainy season. Seasonal variation was also observed with eosinophil (Lawrence and Hawkey, 1996 and Chung et al, 2009). Basophils were highest in winter. Similar observation has been reported by Hernandez et al (2017).

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