

HAEMATOLOGICAL PROFILE OF FRESH WATER TURTLE, *KACHUGA TECTA*

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Much of the inland water is polluted and the situation becoming more grave with population growth and rapid industrialization. Untreated industrial effluents and other industrial byproducts released in to rivers and canals are resulting in deteriorating quality of water; varying levels of toxicity is affecting the aquatic life forms. The toxins affect every part of the organism including blood. Haemotoxins alter the qualitative and quantitative characteristics of blood components, thereby interfering with the normal functions (Hughes, 1997), and leading to disorders and diseases (Patel *et al.*, 1965). Animal survival rates are affected. The need for knowledge in blood norms is gaining significance especially for domestic animals (Patel *et al.*, 1965) due to its importance in the diagnosis of different diseases.

The freshwater turtle, *Kachuga tecta*, listed in Schedule I under the Wildlife (Protection) Act, 1972 (amended in 1991), is under serious threat mainly due to high degree of pollution in its habitat. Local people also hunt this species for food. This paper deals with the study of haematological status of *Kachuga tecta* in relatively less polluted water. The haematological profile can provide a base line data to compare the animal's status in polluted waters of varying degrees. Appropriate conservation measures can be initiated by studying the haematological values of freshwater species in polluted environments.

The study was conducted at Poiya Ghat of River Yamuna at Agra, located between 27°10'N and 78°05'E. At the point where Yamuna enters Agra town sewage water and other nallahs carrying effluents from industries and tanneries join the mainstream.

Two turtles weighing 0.900 kg and 1.100 kg were obtained from local fisherman of the area. The animals were dissected and blood samples were collected directly from the heart and analyzed for erythrocyte count (total and differential), clotting time, haematocrit value, haemoglobin, plasma protein, blood sugar, blood urea and pH as per the methods given by Kolmer *et al.* (1969). Water of the river was also analysed for oxygen, carbonate, bicarbonate and chloride as per standard methods given by Greenberg *et al.* (1992).

The presence of carbonate 0.1%, bicarbonate 0.3%, chlorides

9.3% and dissolved oxygen 17.4 mg/L at normal pressure broadly reflect the chemical nature of water at study site in the month of April. Although the composition of water changes seasonally. the haematological values are in concurrence with the given water quality. Further changes in the water quality can influence blood composition. Changes in blood cell counts, organic and inorganic component may lead to imbalance in the homeostatic condition of the animal. Viscosity of blood increases due to higher haematocrit value that may lead to lower blood pressure. Such haematological changes affect the normal functioning of body systems including reduction in oxygen transportation capacity of blood (Eckert & Randall, 1978; Wilson, 1972). Presence of heavy metals in water lowers the pH of blood. Reports on other turtles indicated the pH of blood serum to be in acidic range (7.4) at 20°C due to heavy metals (Eckert & Randall, 1978). Thus blood profile at any point of time can reflect the amount of pollution and regular monitoring is essential to determine the extent of danger faced by the species. The information obtained may be used to design a strategy for the conservation and survival of the species.

Table 1. Haematological constituents and chemistry of blood in *Kachuga tecta*

Parameters	Values		
	Animal-1	Animal-2	Average
Erythrocytes counts			
(a) Total counts (per mm ³)	28x10 ³	20x10 ³	24x10 ³
(b) Differential count(%)			
Monocytes	1	<1	1
Neutrophil	30	33	31.5
Lymphocyte	69	67	68
Basophil	nil	-	-
Eosinophil	nil	-	-
Clotting time	2min. 13 sec.	1min. 50 sec	2 min. 1 sec.
Haematocrit value	14	19	16.5
Haemoglobin (%)	5	6	5.5
Plasma protein (%)	5.4	5.28	5.34
Blood sugar (%mg)	285	220	252.5
Blood Urea (%mg)	18	20	19
pH	9	9	9

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