



RESEARCH ARTICLE

Haematological Changes in Parrot- *Psittacula krameri manillensis* at District Firozabad, Uttar Pradesh

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ABSTRACT

Environment is the sum of all social economic, biological, physical or chemical factors, which constitute the surrounding of man. The local effects of air pollutants have been most severe in cities undergoing rapid industrialization and population growth. The experimental bird parrot (*Psittacula krameri manillensis*) was exposed for 60 days. The study was conducted in the Firozabad city.

Key words: Haematological Changes, *Psittacula krameri*, physical or chemical factors

INTRODUCTION

Environment is the sum of all social economic, biological, physical or chemical factors, which constitute the surrounding of man. The atmosphere is a complex, dynamic natural gaseous system that is essential to support life on the planet earth. It is the transparent gaseous mantle surrounding the earth that extends to several kilometers and is differentiated into troposphere, stratosphere, mesosphere, thermosphere, and exosphere. At Firozabad which is a city of bangles heavy amount of pollutants such as Carbon Monoxide (CO), Particulate Matter, Sulphur Dioxide (SO₂) and Oxides of Nitrogen (NO_x) emitted through industry. The local effects of air pollutant have been most severe in cities undergoing rapid industrialization and population growth. High level of air pollution has meant increased rates of bronchitis, asthma, lung cancer and infant mortality. Birds also face this problem and suffered with many diseases. Therefore, present investigation is to show the alteration in parrot's blood considering TEC and PCV.

The experimental bird parrot (*Psittacula krameri manillensis*) was exposed for 60 days. The study is conducted in the Firozabad city. The birds will be reared throughout the entire period of study in the well ventilated, well adapt room during the period of research. The haematological parameters studies will be undertaken in cages. The blood samples will be collected on weakened with the help of disposable syringes rinsed with heparin solution directly from veins of parrot. Four samples were collected for control and exposed sets. TEC and PCV were done as per the standard methodology of Decie & Lewis (1975).

MATERIAL AND METHODS

Blood samples were collected aseptically with sterile syringes and needle by Jugular vaine puncture before and after exposure, immediately after collection the blood was transferred to sterile glass bottles containing Ethylene Diamine Tetra Acetic Acid (EDTA) as Anticoagulant, estimation of TEC and PCV using the routine methods.

RESULT AND DISCUSSION

The results showed significant in TEC and PCV after exposure to pollution as compared to control parrots (*Psittacula krameri manillensis*). The findings are in accordance with that of Awasthi *et al.* (2003), Bhati and Singh (2000), Singh (2000) and Sharma (1997) in *Columba livia* after organophosphate treatment; after SO₂ exposure and Carbaryl treatment respectively. Again, Elizabeth (2007), Kondiah *et al.* (2005), Llacuna (2004) and Lumeji

(1997) also support these findings. The decrement in TEC and Hb. conc. is due to toxic effect of pollutants of glass industry on haemopoietic system of parrot (*Psittacula krameri mellensis*) and destruction of RBC in pollution exposed parrot (*Psittacula krameri manillensis*).

Table- 1: TEC in control and 60 days pollution exposed parrot –*P. krameri manillensis* (TEC ($10^6/\text{mm}^3$) in blood of parrot after exposure for 60 days at two different sites of Firozabad city at different time intervals)

Sites	Control	Set A 1 day	Set B 7 days	Set C 15 days	Set D 30 days	Set E 45 days	Set F 60 days
Site-A	2.4+0.08	2.2+0.04*	2.1+0.03*	1.8+0.06**	1.7+0.04**	1.5+0.04**	1.3+0.05***
Site-B	2.3+0.02	2.1+0.01*	2.0+0.04*	1.7+0.05**	1.6+0.06**	1.4+0.05***	1.2+0.04***

Table- 2: PCV in control and 60 days pollution exposed Parrot –*P. krameri manillensis* (PCV (%) in blood of parrot after exposure for 60 days at two different sites of Firozabad city at different time intervals)

Sites	Control	Set A 1 day	Set B 7 days	Set C 15 days	Set D 30 days	Set E 45 days	Set F 60 days
Site-A	45.0+0.6	42.5+0.8*	40.0+0.7*	35.4+0.8**	30.7+0.8**	28.5+0.6***	25.0+0.4****
Site-B	44.5+0.8	40.0+0.5*	38.4+0.7*	33.5+0.6**	27.4+0.6***	25.0+0.2***	22.4+0.8****

* Non significant ($P>0.05$)

** Significant ($P<0.05$)

*** Highly significant ($P<0.01$)

**** Very highly significant ($P<0.001$)

REFERENCES

1. Awasthi J.K., Kumar A. and Sharma D.K. (2003): Effects of an organophosphorus on some blood parameters of *Columba livia* Gmelin. *Journal Zoo India*, 6(2): 221-228.
2. Bhati D.P.S. and Singh P.K. (2000): Effects of SO_2 exposure on haematological parameters in *Columba livia* gemelin. *Indian Journal of Environmental Toxicology*, 34-35.
3. Elizabeth Moreira Dos Santos Schmidt. (2007): Haematological serum chemistry values for the ring-necked pheasant. *International Journal of Poultry Science*, 6: 137-139.
4. Kondiah K., Albertyn J. and Bragg R.R. (2005): Beak and feather disease virus haemagglutinating activity using erythrocytes from African grey parrots and brown-headed parrots. *Journal of Veterinary Research*, 72(3): 263- 265.
5. Llacuna S. (2004): Effects of air pollution on haematological parameters in passerine birds. *Earth and environmental science*, 31: 148-152.
6. Lumeij J.T (1997): In clinical biochemistry of domestic animals. *Avian Clinical Biochemistry*, 857-883.
7. Sharma L.L. (1997): Carbaryl induced haematological changes in *Columba livia* Gmelin. *Journal of Environmental Biology*, 18: 17-22.
8. Singh P.K. (2000): Effects of sulphur dioxide exposure on haematological parameters in *Columba livia* Gmelin. *Indian Journal of Environmental Toxicology*, 10: 34-35.