



Effects of Glass Industrial Pollution on Total Erythrocyte Count of Parrot -*Psittacula Krameri manillensis* at Firozabad city, UP.

Pushpendra Pathak and K.S. Rana

Environmental research lab Agra College, Agra

Dr. B.R.Ambedkar University Agra

Email: pushpendrakumarpathak@gmail.com

ABSTRACT

Haematological changes after the exposure for 60 days at glass industrial area of Firozabad due to air pollution on parrot - *Psittacula Krameri manillensis* were studied. These glass factories emanated the suspended particulate matter and smog. The result showed a significant decrement in Total erythrocyte count after exposure in the glass industrial air pollution area.

Key words:- Haematology, Ring-neck parakeets, TEC, air pollution, Glass industry.

INTRODUCTION

Glass industry is a source of main constituents of photo chemical smog and suspended particulate matter in metropolitan cities and rural area, as it exist in environment. It enters in the blood of birds through lungs, where it causes damage to lungs by altering the normal values of blood. Blood changes due to long -term exposure in the air polluted gases and increase the level of harmful gases concentration e.g. parrot exposed into glass industrial pollution.

MATERIALS AND METHODS

Experimental Birds :- Indian Ring neck parakeets Parrot-*Psittacula Krameri manillensis* purchased from the local area of forests of Firozabad city. The birds were collected in wild using mist net and were fed on pearl millet (Bajra), green chilli, wheat and water.

Experimental Protocol :- Thirty six healthy Parrot-*Psittacula krameri manillensis* were selected for experimentation. The birds were divided into six different group containing six parrots in each group. The given data showed the decreasing values of total erythrocyte count. The total erythrocyte count were calculated after the 1, 7, 15, 30, 45 and 60 days. The control set was recorded as 9.3 ± 0.2 10^6 /mm

Blood samples :- The blood samples were collected on weekend with the help of plastic syringes fitted with 20 SWG needle and mix the blood with the ethylene diamine tetra acetic acid.

Biochemical estimation:- level of total erythrocyte count were estimated by the method given by [1] with standard Neubauer haemocytometer.

Analysis of data:- Data were subjected to stastical evalution using standard statistical procedures student t-test.

RESULTS

The results showed significant decrement in Total erythrocyte count after exposure into Air pollution glass industry as compared to control Parrot-*Psittacula krameri manillensis*. The present study revealed that total erythrocyte count values were significantly decreased [Table 1].

DISCUSSION

The effects of glass industrial air pollution exposure on the haematology of Parrot-*Psittacula krameri manillensis*. Total erythrocyte count was significantly decreased in Parrot -*Psittacula krameri manillensis* after exposure for 60 days. The birds were reared throughout the period of research period with well ventilated well adapt room during the research time. Birds were divided into six different groups containing six Parrot in each group. The blood samples was collected on weekened with the help of plastic syringes fitted with 20 SWG needle and mix the blood with the ethylene diamine tetra acetic acid, directly from the jugular venipuncture of Parrot-*Psittacula krameri manillensis*. The given data showed the decreasing values of Total erythrocyte count. According to the set A 2.2 ± 0.04 , set B

2.1±0.03, set C 1.8±0.06, set D 1.7±0.04, set E 1.5±0.04, set F 1.3±0.05 10⁶/mm³ values were observed after 1,7,15,30,45 and 60 days exposure respectively. The values of Total erythrocyte count were recorded as 2.4±0.08 10⁶/mm³ in control set.

The total erythrocyte count was significantly decreased after air pollution glass industry exposure during 1 to 60 days at different sets and different sites in Firozabad city, UP, India significantly decreased Total erythrocyte count was noticed due to toxic effects of air pollution glass industry gases on the haemopoietic system of Parrot-*Psittacula krameri manillensis* which causes rapid destruction of RBCs. It may be interference due to toxic gases with erythropoiesis mechanism and poor formation of RBCs [1-5].

Table 1: Total erythrocyte count (10⁶/mm³) in the 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 F60 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***

* Non significant (P>0.05), ** Significant (P<0.05), *** Highly significant (P<0.01)

REFERENCES

1. Awasthi, J.K., Anil Kumar Sharma and Dushyan Kumar Sharma. (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 P.K. Singh. (2000): Effects of SO₂ exposure on haematological parameters in *Columba livia* gemelin, *Indian Journal of Environmental Toxicology.* 34-35.
3. Dauwe, T., E. Janssens, L. Bervoets, R. Blust and M. Eens. (2004): Relationships between metal concentrations in great tit nestlings and their environment and food. *Environmental Pollution.* **131**: 373-380.
4. Gorriz, A.S., Llacuna M. Riera and J. Nadal. (2004): Effects of air pollution on haematological and plasma parameter in passerine bird, *Journal Articles.* **31**: 148-152.
5. Kondiah, K., J. Albertyn and R.R. Bragg. (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.