

Effect of Administration of *Lepidium Sativum* on Hematological and Immunological Profile of Chicks (*Gallus domesticus*)

Ranjana Verma

Department of Zoology, BLP Govt. P.G. College, MHOW, Madhya Pradesh, India

ABSTRACT : *Lepidium Sativum* is reliable commonly used medicine since Vedic period in India it is also known as Garden Cress or poor's Pepper or Halim in common language. This study was conducted to assess the hematological and immunological parameter of chicks administered with *Lepidium Sativum* in their feed. Chicks were divided into four groups namely LS-0, LS-1, LS-2, LS-3. Group LS-0 was kept as control, while chicks in group LS-1, LS-2, LS-3 were administered *Lepidium Sativum* in their feed at the concentration of 5, 10, 15 mg/kg BW for thirty days daily. Feed consumption and body weight gain of chicks were observed on regular interval and hematological and immunological parameters were analyzed at the end of experiment. Statistical significant increased value of Feed intake, weight gain, Hb level and PCV was observed in all treated group. A non significant value was observed in the TLC and neutrophils count and monocyte in all treatment groups as compared to control.

KEYWORDS: Body weight, Chicks, Feed intake, Hematology, Immunology, *Lepidium Sativum*

I. INTRODUCTION

Lepidium Sativum also known as garden cress (GC) is medicinal plant belonging to the family Brassicaceae. This plant is cultivated and also found as natural herb in many areas of India. GC seeds have been used as traditional aryurvedic medicine since ancient times in India (1). GC seed are reddish brown in colour and elliptical in shape. The GC grows as a wild plant in regions of Madhya Pradesh, Chhattisgarh, Maharashtra, Uttar Pradesh, and Northern Karnataka. These seeds may increase body weight as they are found to contain 18-24% of fat. α -linolenic acid contributes around 34% of total fat which could increase its nutritional advantages (2). The primary fatty acid in GC seed oil were oleic (30.6 wt %) and linolenic acid (29.3 wt %) and was found to contain high concentration of tocopherol. It contains sufficient amount of ligans and antioxidant, which can balanced the n-3 fatty acids (polyunsaturated) in its seeds oil. The primary phytosterols in GC were sitosterol, campesterol and avenasterol (3). Gc seeds are supplemented in the diet of lactating women to increase the milk secretion during post natal period (4) It also contain contain high amount of Iron and calcium also, administration of these seeds are beneficial in curing certain diseases. The seeds are laxative, ointment, aphrodisiac, rubefacient, carminative, lectogenic, emmenagogue (5). Keeping in view the importance of this seeds present study was designed to examine its effect on hemato-immunological profile of the chicks.

II. MATARIAL AND METHODS

Day old chicks were procured from the hatcheries. Chicks were equally divided into four equal groups namely LS-0, LS-1, LS-2 and LS-3. Group LS-0 was treated as control while group LS-1, LS-2 and LS-3 were treated with *Lepidium Sativum* (GC seeds) at the concentration of 5mg/kg BW, 10mg/kg BW and 15mg/kgBW respectively with their feed daily. The dosing of the chicks was started from day one of the age and lasted till the end of experiment. Feed intake (gm) of birds in different groups was recorded daily. Change body weight (gm) was determined weekly. Birds were vaccinated with Marek's Disease Bivalent vaccine (Merial, Singapore) at day-old age on 7th day of experiment the birds were vaccinated with New Castle disease Lasota strain vaccine (Indovax, Gurgaon, India) through intraocular

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 5, Issue 5, May 2016

route. The birds were also vaccinated against Infectious Bursal disease (IBD) using (Georgia strain, Indovax) at day 14. For estimation of biochemical parameter 6 chicks were selected at random from each group and blood (approx 2ml) was collected from jugular vein in EDTA vials. Blood samples were also analyzed for estimation of hemoglobin (Hb), packed cell volume (PCV), Total leucocytes count (TLC), lymphocyte, eosinophil, monocyte and neutrophils were estimated following method given by Schalm's veterinary hematology(6). The data were analyzed using (student t- test) SPSS 15 and (Data expressed Mean±S.D.) statistical significance was ascribed at P<0.01 and P<0.05.

III. RESULT AND DISCUSSION

Feed consumption and body weight (gm) gain of the birds treated with different concentration of *L Sativum* have been presented in table 1, treated groups showed significant higher feed intake value as compare to control. The highest value recorded in group LS-2 for feed consumption as well as body weight gain. Highest value recorded was (3253.21±0.34gms) for group LS-2 which is significantly higher than controls (2765.26±0.76gms). This increase in the body weight of chick could be correlated to the increase in feed intake of the treated birds. A significant difference was noted in the Hb concentration and PCV value Group LS-1 and LS-2 shows highest value. The finding of this study is in agreement with those of Sarkar and Ghosh, (7) also showed that increase in Hb level and weight gain in lactating rats administrated with GC seeds for 7, 10 and 14 day daily. Due to its high iron and folic acid content, it helps to prevent iron deficiency anaemia. In 2012, Sarkar and Ghosh reported that there was significantly higher weight gain in the treated pups whose mothers were fed garden cress seeds in comparison to that of the control pups. The important finding signifies the galactogogue effect of GC seeds in turn also increase weight of pups also (8). The seeds are also used to compensate vitamin C deficiency and to strengthen the immune system (9). Non-Significantly higher value of mean TLC was observed in the group LS-2. This study shows significantly higher value of feed intake and weight gain in all treated group. There is scarce literature about effect of GC seed on chicks. The dose of garden cress seeds which has been used in the experiment does not show any toxic effect in present study. In another study of Bronchial asthma show exposure of GC seeds reduce eosinophil count up to normal value (10).

Table 1: Mean values of Hematological parameters, feed intake, body weight in chicks feeding with different dose of *lepidium sativum*

Parameters	LS-0 Grp	LS-1 Grp	LS-2 Grp	LS-3 Grp
Feed Intake (gm)	2765.26±0.76 ^b	3019.08±0.87 ^a	3253.21±0.34 ^a	3176.43±0.33 ^a
Body Weight (gm)	139.91±0.87 ^b	147.34±0.65 ^a	161.45±0.23 ^a	158.39±0.31 ^a
Hb(g/dl)	7.34±0.01 ^b	10.98±0.31 ^a	11.11±0.12 ^a	10.95±0.06 ^a
PCV(%)	24.01±0.07 ^b	29.18±0.04 ^a	28.32±0.11 ^a	27.18±0.18 ^a
TLC(×10 ⁹ cells/L)	21.18±0.01 ^b	22.89±0.02 ^a	23.29±0.09 ^a	22.93±0.02 ^a
Neutrophils(%)	39.32±0.21	35.71±0.02	31.65±0.07	37.34±0.01
Lymphocytes(%)	51.12±0.05	51.76±0.02	59.03±0.34	53.40±0.03
Eosinophils(%)	4.17±0.12	4.57±0.05	3.89±0.06	4.79±0.04
Monocytes(%)	3.01±0.19	3.05±0.21	2.89±0.05	2.92±0.09

Values (Mean±SD) bearing different superscript in a row differ significantly (P<0.01 and P<0.05)

IV. CONCLUSION

Lepidium Sativum seeds are rich source of protein, dietary fibers, minerals, vitamins and essential amino acids. These seeds improve the hematological parameters, especially Hb concentration, PCV and TLC in broiler chicks. Moreover, it enhances feed intake, body weight gain and immunological status of the birds. Keeping in view the beneficial effects of this plant, further studies might be launched to recommend its use in poultry to enhance its productivity.

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 5, Issue 5, May 2016

REFERENCES

- [1] Mali RG, Mahajan SG, Mehta AA, 2007. *Lepidium Sativum*(Garden Cress): A review of contemporary literature and medicinal properties. *Oriental Phar Exper Med* 7(4):331-335.
- [2] Diwakar BT, Dutta PK, Lokesh BR, Naidu KA, 2010. Physicochemical properties garden cress (*Lepidium sativum*) seed oil. *J Am Oil Chem Soc* 87:539–548.
- [3] Bryan RM, Shailesh NS, Jill KW, Steven FV and Roque LE, 2009. Composition and physical properties of cress (*Lepidium sativum* L.) and field pennycress (*Thlaspi arvense* L.) oils. *Industrial Crops and Products* (30): 199–205.
- [4] Sahsrabudde MB, De NN, 1943.. The Wealth of India, Raw Materials. Publication and information Directorate, CSIR, New Delhi. Vol.VI, p. 71-73, 1962. *Current Sci*, 12, 23-24
- [5] Nadkarni KM, Nadkarni AK, 1954. *Lepidium sativum* Linn, In; The Indian Materia medica with ayurvedic, unani and home remedies, Bombay,India; *Popular prakashan* (3): 736-737.
- [6] Schalm's Veterinary hematology VI edition 2010. Edited by Douglas Weiss and K.Jane Wardrop, Willey- Black Well, A Jhon Wiley and Sons Ltd Publication 2121 State Avenue, Ames, Iowa 50014-8300 USA.
- [7] Sarkar S and Ghosh I, 2011. Galactagogue effect of Garden Cress Seeds on Lactating Rats, *Asian J. Exp. Sci*, 25(2): 87- 92.
- [8] Sarkar S and Ghosh I, 2012. *Lepidium sativum* seeds fed to lactating rats as galactagogue and its effect on the weight gain of new born rat's up to twenty one days. *Ind J Sci Cruiser*, 26(3): 24-28
- [9] Fleming T, 1998. PDR for Herbal Medicines, 1st edn. Medical Economics 393 Company, Inc.: Montvale, 933–934.
- [10] Paranjape Archana N, Metha Anita A, 2006. *Iranian Journal Of Pharmacology & Therapeutics* (5):55-59.