

## **ASPARAGUS RACEMOSUS WILLD. ROOT EXTRACT AS HERBAL NUTRITIONAL SUPPLEMENT FOR POULTRY**

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### **ABSTRACT**

The present study was done to study the average body weight gain and increase in feed conversion efficiency in broiler chicks administered with different preparations of *Asparagus racemosus Willd.* root extracts orally mixed in their feed. After the trial, marked ( $P < 0.05$ ) overall improvements were evidenced in the form of increase in average body weight gain and feed conversion efficiency of the birds.

**Keywords:** weight gain, conversion efficiency, Broiler; *Asparagus racemosus Willd.*

## INTRODUCTION

An immuno-modulator is a substance which stimulates or suppresses the components of immune system including both innate and adaptive immune responses (Agarwal and Singh, 1999). The modulation of immune system by various medicinal plant products has become a subject for scientific investigations currently worldwide. One such plant, *Asparagus racemosus*, commonly called ‘Shatavar’ possess anti-diarrheal, anti-ulcerative, anti-spasmodic, aphrodisiac, galactagogue and other properties and has therefore gained its importance in Ayurveda, Siddha and Unani systems of medicine (Nadkarni, 1954). It has also been examined for its immuno-modulatory properties.

Presently, poultry farming has gained immense importance in the socio-economic scenario in Indian livestock sector. For enhanced productivity of eggs and meat, it is needed for cheaper feed supplements which improve the overall weight gain of the birds and their feed conversion efficiency within short period of time. So, nowadays research are being carried out by scientists regarding different herbal preparations. These also possess adequate immune-modulatory effects which augment the resistance of the birds against various infectious diseases. The present study has been carried out with the objective of increase in total body weight gain and feed conversion ratio after the oral administration of *A. racemosus* root extract mixed with their feed mash in different preparations.

## MATERIALS AND METHODS

Fifty (50 No.) day old broiler chicks were procured from a private hatchery and were maintained under standard hygienic conditions of feeding and housing. On the 7<sup>th</sup> day, they were divided into three groups (Groups 1–3) comprising of fifteen (15 No.) chicks in each group. They were provided with ration as broiler starter (0–2 weeks), broiler grower (3–4 weeks) and broiler finisher (5–6 weeks). *A. racemosus* root extract was prepared from root juice concentrated into *A. racemosus* powder at low temperature under experimental conditions. Group 1 consisted of treated chicks fed with *A. racemosus* root extract treated feed @ 1 g/kg feed standard dose, Group 2 was kept as vaccinated control comprising of chicks administered with ND vaccine as per recommended schedule but without being fed with *A. racemosus* extract treated feed and Group 3 was the non-vaccinated control which consisted of untreated and unvaccinated chicks respectively.

The live body weight of chicks was measured at weekly intervals on 1<sup>st</sup>, 7<sup>th</sup>, 14<sup>th</sup>, 21<sup>st</sup>, 28<sup>th</sup>, 35<sup>th</sup> and 42<sup>nd</sup> days of experiment. The feed efficiency was calculated in terms of feed conversion efficiency (ratio).

Feed conversion efficiency was measured at weekly intervals on the basis of total feed intake and total gain in body weight. The feed conversion efficiency was interpreted as given below:

$$\text{Feed conversion efficiency (ratio)} = \frac{\text{Total feed consumed (g) in particular period}}{\text{Total body weight gain (g) during same period}}$$

Statistical analyses for different parameters were done as per the method described by Snedecor and Cochran (1994).

## RESULTS

Non-significant effect was observed in body weight gain due to herbal treatment from 0 to 35<sup>th</sup> day at weekly intervals. The tendency of body weight gain was more in Group 1 (*A. racemosus* treated) as compared to both Groups

2 and 3 respectively. The effect of *A. racemosus* treatment had significant influence ( $P < 0.05$ ) on body weight at 42<sup>nd</sup> day of age. Critical difference test showed significantly higher body weight in Group 1 (1901.87g ± 40.82) than Groups 2 and 3 respectively (Table 1). Better cumulative feed conversion

efficiency was observed in Group 1 (2.37:1) in the present study than that of the vaccinated

and non-vaccinated control groups respectively (Table 2).

**Table 1. Average body weight gain (in gm) of broiler birds of different groups\*.**

Age of chicks (in day)	Group 1	Group 2	Group 3	ANOVA-value
1	48.06 ± 1.23	48.06 ± 1.23	48.06 ± 1.23	NS
7	114.27 ± 1.27	113.86 ± 1.35	113.67 ± 1.26	0.056 <sup>NS</sup>
14	276.40 ± 5.67	286.6 ± 6.39	261.73 ± 4.71	1.69 <sup>NS</sup>
21	599.20 ± 17.35	588.66 ± 12.47	574.60 ± 14.642	0.68 <sup>NS</sup>
28	981.33 ± 20.53	967.40 ± 14.45	955.4 ± 14.59	0.60 <sup>NS</sup>
35	1409.47 ± 43.19	1381.47 ± 23.94	1324.6 ± 30.70	1.06 <sup>NS</sup>
42	1901.87 ± 0.82 <sup>a</sup>	1809.87 ± 0.44 <sup>ab</sup>	1765.27 ± 4.63 <sup>c</sup>	3.28 <sup>*</sup>

Values bearing different superscripts in a row differed significantly, Values bearing same superscript in the column did not differ significantly, NS: Non significant, \*P<0.05

**Table 2. Cumulative feed conversion efficiency (ratio) in broiler birds of different groups.**

Treatment group	Total feed consumed (kg)	Total body weight gain (kg)	Feed conversion efficiency
Group 1	65.95	27.82	2.37:1
Group 2	65.37	26.43	2.47:1
Group 3	64.26	25.46	2.52:1

## DISCUSSION

The findings of increased body weight gain in the present study by feeding *A. racemosus* root extract to broiler chicks has been supported by the reports of Sarag and Khobragade (2003) in which higher live body weight gain in broiler birds were observed after supplementation with *T. cordifolia*, another promising herbal feed supplement in poultry ration. The findings in this study are also supported by Thatte *et al.* (2001) in which he recorded higher body weight gain in mice supplemented with *T. cordifolia*. Levamisole, a potent anthelmintic, is also reported to induce body weight gain by the studies of Mani *et al.* (2001) and Panda and Rao (1994) in which they had observed and reported the effects of levamisole in broiler chicks infected with infectious bursal disease virus.

A study was carried out to determine the immuno-modulatory effects of 'Ashwagandha' (*Withania somnifera*) and 'Satavar' (*Asparagus racemosus*) extract treated feed and to analyze

the role of T and B cells in host defense against Newcastle disease in one week old normal and immuno-compromised boiler chicks. After the treatment significant (P<0.001) positive effects were observed in both humoral and cell mediated immune responses of the birds. However, the bursectomized and thymectomized birds showed a decline in the antibody titer. The variation in skin thickness was significantly (P<0.001) more among the herbal treated groups rather than the non-treated groups which was a clear marker for immuno-stimulation among the birds (Kumari *et al.*, 2011).

In another study carried out by Kumari *et al.* (2012) the immuno-modulatory effects of *Asparagus racemosus* extract treated feed was determined to analyze the role of T and B cells in host defense against Newcastle disease in one week old normal and immuno-compromised boiler chicks. After the treatment significant (P<0.01) positive effects were observed in both humoral and cell mediated immune responses of the birds which was

found to be evident by increased antibody titer after HI test. The variation in skin thickness was significantly ( $P < 0.01$ ) more among the herbal treated groups rather than the non-treated groups which was a clear marker for immuno-stimulation among the birds.

## CONCLUSION

The present study showed that herbal preparations of *A. racemosus* root extract can be beneficially used as an effective feed supplement in poultry for its encouraging

results in relation to total body weight gain and feed conversion efficiency. It can also be used potentially before mass vaccination of the chicks for its property of immune-modulation like levamisole.

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