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Effect of dietary supplementation of Shatavari, Ashwagandha root powder and vitamin E on performance of colour broilers

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Abstract
An experiment was conducted to study the effect of dietary supplementation of shatavari (*Asparagus racemosus*), Ashwagandha (*Withania somnifera*) and vitamin E on the performance of coloured broilers. Result indicated that 1% Shatavari root powder (SRP) significantly improve body weight, feeding efficiency, conformation traits (Breasr angle, Shank length and Keel length) and carcass yield over control broilers. 1% Ashwagandha root powder (ARP) and 200mg/kg vitamin E did not show significant difference for these traits except feeding efficiency. Combination of 1% SRP with 1% ARP (T_4), 1% SRP with 200mg/kg vitamin E (T_5) or all three together (T_7) significantly improved performance than its single effect. T_7 treatment group was than superior among all treatments.

Keywords: Shatavari, Ashwagandha, Vitamin E, colour broilers, performance

1. Introduction
Poultry is one of the fastest growing segment of the agricultural sector in India which has emerged on the world poultry map as the 3rd largest eggs (66 billion eggs) and 5th largest poultry meat (2.6million tons) producer. Indian broiler industry is growing at a rate of 10-15% per annum. There are various promising natural herbs as liver tonic, immunomodulator and adoptogenic to stress and toxins, leading to lower mortality, morbidity and enhance growth and production performance. Supplementation of shatavari root powder had beneficial effect on body weight and feed conversion efficiency and improves general health status of the bird, Rekhate *et al.* [8]. Ashwagandha widely used herbal medicine as immunomodulatory, general tonic, hepatoprotective, antistress and growth promoter, Akotkar *et al.* [1]. Vitamin E is a natural antioxidant and its supplementation has been reported to improve feeding efficiency. Studies related to shatavari, Ashwagandha and vitamin E effect on performance of broiler are scanty and almost lacking in literature in multi colour broilers which are mostly used in rural poultry production. Considering nutritional benefits of these herbs and vitamin E, the present research experiment was planned to assess its effect as a single and combined form on performance of colour broiler.

2. Material and methods
Experimental coloured broiler chicks were produced by crossing sire of colour synthetic female line broilers breeder with coloured dual type female line. A total of 180 healthy day old chicks were distributed into 9 dietary treatment groups. Each treatment group was randomly allocated 20 chicks in 2 replicates. Each replicate consisting of 10 chicks (5 males and 5 females). Basal diet was prepared with 23%CP with 2900ME kcal/kg for 0-3 weeks and 21% CP with 3000 ME kcal/kg for 4-7 weeks period which act as control (T_0). Various other dietary treatments were T_1 shatavari root powder 1%, T_2 Ashwagandha 1%, T_3 vitamin E 200mg/kg diet, T_4 shatavari 1%+Ashwagandha 1%, T_5 shatavari1%+vit.E 200mg/kg diet, T_6 Ashwagandha 1%+vit.E 200mg/kg, T_7 shatavari1%+Ashwagandha 1%+vit. E 200mg/kg, T_8 shatavari 0.5%+Ashwagandha 0.5%+vit. E 100mg/kg diet. At 7 week age conformation traits breast angle, shank length and keel length were measured. Birds were fasted for 12 hours than slaughtered to study carcass traits. Collected data were analysed by using compete randomized design as per Snedcor and Cocharan [9]. The following statistical model was used to test the effect of treatment on performance traits of colour mediocre broiler.

Yij = μ + Ti + Eij
Yij = jth observation of ith treatment
μ = over all mean (mean effect)
Ti = effect due to ith treatment were i varies from T_0 to T_8
Eij = experimental or random error.

3. Results

Treatment T_1 (1% SRP) had significantly higher body weight than T_0 (Control), T_2 (1% ARP) and T_3 (200mg/kg vit. E) treatment broilers. T_2 and T_3 were nonsignificantly different from control group. Result indicated that SRP and its combination with ARP and vitamin E or all three together favour higher body weight gain. Treatment T_7 has significantly highest body weight among all treatments.

All single supplements T_1, T_2 and T_3 were significantly improved in breast angle, shank length and keel length over T_0 control group. Group T_1 was significantly better than T_2 and T_3. In combination treatment effect, T_7 has superior conformation than control and all other treatment groups. Result has shown that 1% SRP in combination with 1% ARP or 200 mg/kg vit. E or all three together (T_7) attained better conformation compared to 1% ARP with 200 mg/kg vit. E or all three together in half doses (T_8).

Total meat yield in T_1 single supplement was found significantly higher than T_0 control group. Whereas effect of T_2 and T_3 in meat yield was not observed. All combine supplements T_4, T_5, T_7 and T_8 were significantly higher in meat yield than control group. A significantly highest total meat yield was observed in T_7 treatment group. Percent breast meat yield in T_0, T_3 and T_8 revealed nonsignificant difference and these were significantly lower than all other treatment groups. Breast cut up portion of T_1, T_2, T_4, T_5 and T_7 shown similarly in yield with numerically higher value observed in T_4 treatment group.

Table 1: Effect of dietary treatments on performance of colour broilers

Treatments		Body wt. (g)	Conformation traits			Breast meat yield (%)	Total meat yield (%)
			Breast angle (^{0})	Shank length (cm)	Keel length (cm)		
T_0	Control	1154.0^{e}	59.30^{f}	6.90^{f}	8.18^{g}	22.45^{c}	68.18^{d}
T_1	Shatavari 1% in diet	1215.0^{c}	62.65^{c}	7.69^{c}	9.08^{c}	23.15^{ab}	68.93^{c}
T_2	Ashwagandha 1% in diet	1184.5^{de}	62.00^{d}	7.19^{d}	8.45^{e}	23.16^{ab}	68.25^{d}
T_3	Vitamin E 200 mg/kg in diet	1179.5^{e}	61.15^{e}	7.04^{e}	8.34^{f}	22.48^{c}	68.25^{d}
T_4	Shatavari 1% + Ashwagandha 1% in diet	1243.0^{b}	63.30^{b}	7.96^{b}	9.25^{b}	23.32^{a}	69.28^{b}
T_5	Shatavari 1% + Vitamin E 200 mg/kg in diet	1255.7^{b}	63.10^{bc}	8.01^{b}	9.25^{b}	23.12^{ab}	68.89^{c}
T_6	Ashwagandha 1% + Vitamin E 200 mg/kg in diet	1218.5^{c}	62.10^{d}	7.22^{d}	8.93^{d}	23.00^{b}	69.00^{bc}
T_7	Shatavari1%+Ashwagandha + Vitamin E 200mg/kg in diet	1298.2^{a}	63.85^{a}	8.10^{a}	9.46^{a}	23.21^{ab}	70.32^{a}
T_8	Shatavari0.5%+Ashwagandha 0.5%+VitaminE100mg/kg in diet	1202.7^{cd}	61.65^{de}	7.02^{e}	8.37^{f}	22.62^{c}	68.76^{c}

Means bearing different superscripts in a column are significantly different. (p<0.01)

4. Discussion

Significantly highest body weight with 1% SRP was in agreement with the result of Rekhate *et al*. [8] and Gaikwad *et al*. [5]. Result did not supported finding of Dahale *et al*. [4] who reported nonsignificant effect of shatavari root powder on body weight gain. Considering combine affect, Kant *et al*. [7] reported significantly improved body weight in 1% SRP with 200 mg/kg vitamin E supplementation than their individual effect. Similar finding was also reported by Srivastava *et al*. [10] on supplementation of *Asparagus racemosus*, *Withania somnifera and mucuna pruriens* in broiler diet. The present results supported finding of above authors and concluded that T_7 significantly improved body weight of chicks.

Table observation shown that 1% SRP (T_1) has significantly better conformation than control (T_0), 1% ARP (T_2) and 200 mg/kg vit. E (T_3). Bhardwaj [2] reported significantly improved conformation of quail chick in 1% SRP and 1% ARP than control group and effect was found better in 1% SRP supplementation. Similar finding for effect of SRP and vit. E on shank length and keel length was reported by Kant *et al.* [7]. Further Kant *et al.* [7] reported that synergistic effect of combine treatment given better result than individual effect of 1% SRP and 200 mg/kg vit. E. The present result shown better effect in combined treatments and T_7 was significantly highest values than all treatment groups.

Percent total meat yield was significantly higher in 1% SRP. Similar finding was reported by Kant *et al.* [7] and Gaikwad *et al*. [5]. Significantly higher total meat yield in combined supplement was in accordance with the result of Srivastava *et al*. [10]. The present result shown highest meat yield in T_7 treatment group. Nonsignificant effect of 1% ARP on total meat yield was in agreement with the finding of Kale *et al.* [6]. Effect of vit. E on total meat yield was also nonsignificantly different from control group. The finding was in accordance with the result of Bobade *et al*. [3]. Significantly higher percent breast meat yield portion in 1%SRP and 1% ARP than control group broilers was in agreement with the finding of Bhardwaj [2]. In contrary Kale *et al.* [6] reported nonsignificant difference in % cut up yield due to 1% ARP supplementation. In accordance with Bobade *et al*. [3] effect of vit. E was not observed on % cut up yields of broilers.

5. Conclusion

Result of these investigation concluded that shatavari was beneficial in improving growth traits and carcass yield of coloured broilers and T_7 combine supplements was superior among all treatments.

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7. References

1. Akotaker MS, Surag SM, Rekhate DH, Dhok AP. Effect of supplementation of Ashwagandha (*Withania somnifera*) on performance of broilers. Indian Journal of Poultry Science. 2007; 42:92-94.
2. Bhardwaj RK. Study on efficiency of shatavari and

Ashwagandha root powder supplementation on production, reproduction and carcass traits of Japanese quails. Ph.D. Thesis, submitted to Govind Ballabh University of Agriculture and Technology, Pantnagar. Uttarakhand, India, 2009.
3. Bobade SP, Sarag AN, Rekhate DH, Dhok AP Joge SV. Efficacy of vitamin E and selenium on growth performance of broilers. Veterinary World. 2009; 2(1):20-21
4. Dahale GS, Wankhede SM, Kale VR. Growth performance serum biochemical profile and carcass quality of broiler chickens fed diets supplemented with shatavari (*Aspargus recemosus*) root powder. Indian Journal Animal Nutrition. 2014; 31(2):166-171.
5. Gaikwad DS, Nage SP, Chavan SD, Jadhav DB. Effect of supplementation of shatavari root powder on broiler characteristics and economics of vencobb-400 chicks. An International Quarterly Journal of Environmental Sciences. 2015; 7:259-262.
6. Kale VR, Wankhede SM, Karle SD. Effect of dietary supplementation of Ashwagandha (*Withania somnifera*) on carcass quality of broiler chicken. Indian Journal of Animal Nutrition. 2014; 31:81-85.
7. Kant S, Ali N, Chandra Singh, RK. Effect of shatavari and vitamin E on growth performance, biochemical profile and dressing percentage of broiler during winter season. Indian Journal of Poultry Science. 2015; 50:158-162.
8. Rekhate DH, Ukey S, Leena N, Mangle G, Deshmukh BS. Effect of supplementation of shatavri (*Aspargus recemosus wild*) on haematobiochemical parameters of broiler. Veterinary World. 2010; 3:280-281.
9. Snedecor GW, Cochran WG. Statistical methods. 8th Edition, Iowa State University Press, Ames, Iowa. 1994.
10. Srivastava SB, Niwas R, Singh DP, Bisen B. Impact of herbal based diets on production efficiency of broiler. The Bioscan. 2013; 8(1):119-122.
11. Vasantha Kumar P, Pangayarselvi B, Sasikumar P, Chandrasekran D, Doraisamy KA. Purushothaman MR. Performance of broiler fed Ashwagandha (*Withania somnifera*) incorporated diets during summer season for alleviating heat stress. Indian Journal Animal Research. 2014; 49:333-335.