Herbal response of shatavari, ashwagandha root powder and vitamin E on performance of colour broilers

Kiran Chikwa, SS Atkare, JK Bhardwaj and RP Nema

Abstract
An experiment was conducted to assess the effect of dietary supplementation of shatavari root powder (Asparagus racemosus), ashwagandha root powder (Withania somnifera) and vitamin E on performance of coloured broilers. 1% shatavari root powder in diet (T1) significantly improved body weight, feed efficiency and carcass yield over control broilers. 1% ashwagandha root powder (T2) and 200mg/kg vitamin E (T3) did not showed significant difference for these traits except feed efficiency. Combination of supplementation of 1% SRP with 1% ARP (T4) or 1% SRP with 200mg/kg vitamin E (T5) or all three together (T7) have significantly improved performance than their single effect and significantly highest body weight, feed intake, feed efficiency and carcass yield was recorded in T7 treatment group than all other treatments groups.

Keywords: colour broilers, growth performance, shatavari, ashwagandha, vitamin e

Introduction
The use of medicinal plant as feed additives is gaining popularity word wide. The root powder of shatavari possess anabolic properties viz. Appetizer, liver stimulant, immunomodulant, growth promoter, and antioxidant (Sharma et al., 1986) (15). Ashwagandha (Withania somnifera) is widely used herbal medicine as immunomodulatory, general tonic, hepatoprotective, antioxidant. Vitamin E is a natural antioxidant, maintain cell membrane integrity. Improved performance of broilers has been reported in literature by supplementing shatavari root powder (Gaikwad et al., 2015) [7] ashwagandha root powder (Vasantha kumar et al., 2014) [20] and vitamin E (Niu et al., 2009) [14]. However, contrary reports are also there in literature. Little information are available on comparative and combined effect of these herbal products and vitamin E on growth and carcass traits of broilers. The present study was therefore conducted in colour mediocre broilers to evaluate its performance by dietary inclusion of SRP, ARP and Vit. E in separate and combined treatments.

Material and Methods
180 coloured broiler chicks were produced by crossing of sire of colour synthetic female line broiler breeder with coloured dual type female line. Day old chicks were distributed in 9 dietary treatments. Each treatment having two replicates (10chicks/replicates). Basal diet has 23%CP with 2900ME kcal/kg during 0-3 week and 21% CP with 3000 ME kcal/kg during 4-7 week period. Various dietary treatments were T0 (Control), T1 (SRP 1%), T2 (ARP 1%), T3 (Vitamin E 200mg/kg diet), T4 (SRP 1%+ ARP 1%), T5 (SRP 1%+ Vit. E 200mg/kg diet), T6 (ARP 1%+ Vit. E 200mg/kg), T7 (SRP 1%+ ARP 1%+ Vit. E 200mg/kg), T8 (SRP 0.5% + ARP 0.5%+ Vit. E 100mg/kg diet). Body weight, feed intake, feed efficiency were measured weekly up to 7 week and carcass yield were recorded at 7th week of age. Collected data were analysed as per18

Result and Discussion
Among the single supplement T1 (1% SRP) had significantly higher body weight than T0 (Control), T2 (1% ARP) and T5 (200mg/kg vit. E) Treatment broilers. Increased body weight in T2 and T5 were non-significantly different from T0. Further result indicated that SRP and its combination with ARP (T4) and vitamin E (T5) or all three together (T7) favour higher body weight gain. Significantly highest body weight was recorded in T7 treatment than all other treatment groups.

~ 508 ~
Significantly highest body weight with 1% SRP was in agreement with the result of Pedulwar et al. (2007) [12] and Kant et al. (2015) [10]. Result did not support the finding of Dahale et al. (2014) [5] who reported non-significant effect of shatavari root powder on body weight gain. Considering combine effect, author Kant et al. (2015) [10] has reported significantly improved body weight of broilers containing 1% SRP with 200 mg/kg vitamin E in diet over control and from their separate effect. Similar finding was also reported by Srivastava et al. (2013) [19] on supplementation of Withania somnifera, Withania somnifera and Mucuna pruriens in broiler diet. The present result for combination effect was in agreement to these authors. Non-significant effect of 1% ARP on body weight was in contrary to the finding of Vasantha kumar et al. (2014) [20] and Saini et al. (2015) [13]. Similarly non-significant difference in body weight with dietary vitamin E supplementation was in accordance with the result of El-Gogary et al. (2015) [6] and Sasiadek et al. (2016) [14].

Feed intake of T1, T2, T3 and T5 were non-significantly different from control group whereas combined supplementation T4, T5, T6 and T7 treatments were significantly higher in feed intake than control group. Among all treatments T7 has significantly highest feed intake. Similar to the present study non-significant difference in feed intake has been reported in literature due to SRP Kant et al. (2015) [10] and Gupta et al. (2016) [9] due to ARP Sisodiya et al. (2008) [16] and due to vitamin E Niu et al. (2009) [11] and Avila–Ramos et al. (2012) [2]. Significantly increased feed intake in combined supplementation was in collaboration with the finding of Srivastava et al. (2013) [19] and Kant et al. (2015) [10]. All treatment groups were significantly better in feed efficiency than control group. Similar feed efficiency were observed for T3 and T7 treatments with non-significant difference from T1 and significantly better than all other treatment groups. Author Gaikwad et al. (2015) [7] reported significantly better feed efficiency with 1% SRP supplementation in diet. Similarly significantly improved feed efficiency with ARP supplementation has been reported by Akotaker et al. (2007) [7] and Sisodiya et al. (2008) [16]. Better feed efficiency with vitamin E supplementation was in accordance with the finding of Kale et al. (2014) [9] and El-Gogary et al. (2015) [6].

Significantly higher total meat yield (TMY) in 1% SRP diet than control diet was in consistent with the finding of Pedulwar et al. (2007) [12], Bhardwaj et al. (2009) [3] and Kant et al. (2015) [10]. Non-significant difference in total meat yield due to 1% ARP and control group was supported the results of Kale et al. (2014) [9] but was in contrary to the finding of Saini et al. (2015) [13] and Singh et al. (2017) [17] who reported significantly higher per cent total meat yield with ARP than control group broilers. Vitamin E supplementation (T3) also did not affected per cent TMY of broilers which was in agreement with Bobade et al. (2009) [9] and El-Gogary et al. (2015) [6]. Synergistic effect of combined supplements significantly improved TMY over control and significantly highest TMY than all other treatments was recorded in T7 treatment broilers.

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

<table>
<thead>
<tr>
<th>Treatments</th>
<th>Bodywt. (g)</th>
<th>Feed intake</th>
<th>Feed efficiency</th>
<th>Total meat yield (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>1154.0</td>
<td>2350±c</td>
<td>2.04±e</td>
<td>68.18±c</td>
</tr>
<tr>
<td>T1</td>
<td>1215.0</td>
<td>2375±d</td>
<td>1.97±c</td>
<td>68.9±3</td>
</tr>
<tr>
<td>T2</td>
<td>1184.5</td>
<td>2340±e</td>
<td>1.98±b</td>
<td>68.2±5</td>
</tr>
<tr>
<td>T3</td>
<td>1179.5</td>
<td>2335±e</td>
<td>1.99±d</td>
<td>68.2±5</td>
</tr>
<tr>
<td>T4</td>
<td>1243.0</td>
<td>2413±b</td>
<td>1.95±e</td>
<td>69.3±2</td>
</tr>
<tr>
<td>T5</td>
<td>1255.7</td>
<td>2424±b</td>
<td>1.93±e</td>
<td>68.9±3</td>
</tr>
<tr>
<td>T6</td>
<td>1218.5</td>
<td>2412±b</td>
<td>1.98±d</td>
<td>69.0±4</td>
</tr>
<tr>
<td>T7</td>
<td>1298.2</td>
<td>2483±e</td>
<td>1.92±d</td>
<td>70.3±2</td>
</tr>
<tr>
<td>T8</td>
<td>1202.7</td>
<td>2312±e</td>
<td>2.01±e</td>
<td>68.7±6</td>
</tr>
</tbody>
</table>

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

### Conclusion

Result of these investigation concluded that shatavari was beneficial in improving growth traits and carcass yield of coloured broilers and T7 combine supplements was superior among all treatments.

### References
8. Gupta R, Rawat SK, Kumar A, Kumar V. Impact of

---

Uttarakhand, India, 2009.


