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

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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 world 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, antistress and 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 (Vasanth kumar *et al.*, 2014) [20] and vitamin E (Niu *et al.*, 2009) [11]. 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 T₃ (200mg/kg vit. E) Treatment broilers. Increased body weight in T₂ and T₃ 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.

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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 supported 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 *Asparagus racemosus*, *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 supplement 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 T₈ 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) [8] 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 T₅ and T₇ treatments with non-significant difference from T₄ 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) [1] 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) [4] 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

| Treatments | Bodywt. (g) | Feed intake | Feed efficiency | Total meat yield (%) |
|---|----------------------|---------------------|---------------------|----------------------|
| T ₀ Control | 1154.0 ^e | 2350 ^{cde} | 2.04 ^e | 68.18 ^d |
| T ₁ Shatavari 1% in diet | 1215.0 ^c | 2357 ^{cd} | 1.97 ^{bc} | 68.93 ^c |
| T ₂ Ashwagandha 1% in diet | 1184.5 ^{de} | 2340 ^{de} | 1.98 ^{bcd} | 68.25 ^d |
| T ₃ Vitamin E 200 mg/kg in diet | 1179.5 ^c | 2335 ^{de} | 1.99 ^{cd} | 68.25 ^d |
| T ₄ Shatavari 1% + Ashwagandha 1% in diet | 1243.0 ^b | 2413 ^b | 1.95 ^{ab} | 69.28 ^b |
| T ₅ Shatavari 1% + Vitamin E 200 mg/kg in diet | 1255.7 ^b | 2424 ^b | 1.93 ^a | 68.89 ^c |
| T ₆ Ashwagandha 1% + Vitamin E 200 mg/kg in diet | 1218.5 ^c | 2412 ^b | 1.98 ^{bcd} | 69.00 ^{bc} |
| T ₇ Shatavari 1% + Ashwagandha 1% + Vitamin E 200mg/kg in diet | 1298.2 ^a | 2483 ^a | 1.92 ^a | 70.32 ^a |
| T ₈ Shatavari 0.5% + Ashwagandha 0.5% + Vitamin E 100mg/kg in diet | 1202.7 ^{cd} | 2312 ^c | 2.01 ^d | 68.76 ^c |

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.

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