INTRODUCTION

The economics of broiler industry depends on the production cost which in turn relies on feed. Over a decade many efforts have been taken by the producers to reduce the feed cost, improve body weight, improve feed conversion ratio, and develop disease free with low mortality. This lead to the development of feed containing feed additives for improved feed efficiency and obtain profitable returns in short period. The term feed additive in a broad sense is applied to all products other than those commonly called feed stuff, which could be added to the ration with purpose of obtaining some special effects (Felt and Fox, 1979). A number of feed additives including antibiotics have been widely employed in the poultry industry for past several decades. The use of antibiotic growth promoters in poultry diet have been under scrutiny for many years due to accumulation of antibiotic residues in poultry products and development of antibiotic resistant strains. Hence feeding of antibiotics in poultry and animals has been banned (Alcicek et al., 2004) in many countries and many are expected to do so in near future. Withdrawal of antibiotics from poultry feeds created a need for alternative solutions which would influence improvement of health and production traits of broiler chickens. This accelerated the increasing investigations on natural or organic feed additives to achieve the best growth performance, eliminate pathogens and improve feed efficiency. Most of these natural feed additives are products of ancient medicinal system and today the use of natural feed additives as substitute for antibiotics in poultry production has become an area of great interest. Panchagavya and Triphala are one such, traditional formulation described in Ayurveda. Panchagavya is a formulation of animal products used since Vedic times in Indian civilization.

Panchagavyam means mixture of five products of cow namely dung, urine, milk, curd and ghee. According to Ayurveda all the five substances of Panchagavya possess medicinal properties and used to treat various disease conditions in human being either singly or in combination with some other herbs (Dhama et al., 2005). Ancient scriptures such as “Bhel Samhita”, “Kashyap samhita”, “Charak samhita”, “Sushruta Samhita”, “Gad Nigraha” and “Ras Tantra Saar”, have mentioned highly about the divinity and significance of Panchagavya in human life. It was believed that regular

Research Article

EFFECT OF DIETARY SUPPLEMENTATION OF PANCHAGAVYA AND TRIPHALA ON GROWTH PERFORMANCES AND ECONOMIC EFFICIENCY IN BROILER CHICKEN

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ABSTRACT

The study was conducted for 0-42 days with two hundred and forty three number of day old unsexed broiler chicken randomly divided into nine treatment groups with three replicates per treatment, containing nine birds per replicate. The nine treatment groups included the T1 - control (fed basal diet), T2 - basal diet + 10ml panchagavya/ kg diet, T3 - basal diet + 15ml panchagavya/ kg diet, T4 - basal + 1g triphala/ kg diet,T7 - basal diet + 15ml panchagavya + 1g triphala/ kg diet,T8 - basal diet + 15ml panchagavya + 1g triphala/ kg diet ,T9 - basal diet + 15ml panchagavya + 2g triphala/ kg diet. The result showed an significantly increased (p<0.01), body weight and recorded higher net profit per bird with supplementation of Panchagavya and Triphala either alone and in all possible combinations except the group fed 15ml/kg Panchagavya (T3), however the group fed 15ml/kg Panchagavya (T3) dietary supplementation has reported a decreased feed consumption while other treatment groups has not decreased the feed intake and a non significant influence in FCR was observed.

INTRODUCTION

The economics of broiler industry depends on the production cost which in turn relies on feed. Over a decade many efforts have been taken by the producers to reduce the feed cost, improve body weight, improve feed conversion ratio, and develop disease free with low mortality. This lead to the development of feed containing feed additives for improved feed efficiency and obtain profitable returns in short period. The term feed additive in a broad sense is applied to all products other than those commonly called feed stuff, which could be added to the ration with purpose of obtaining some special effects (Felt and Fox, 1979). A number of feed additives including antibiotics have been widely employed in the poultry industry for past several decades. The use of antibiotic growth promoters in poultry diet have been under scrutiny for many years due to accumulation of antibiotic residues in poultry products and development of antibiotic resistant strains. Hence feeding of antibiotics in poultry and animals has been banned (Alcicek et al., 2004) in many countries and many are expected to do so in near future. Withdrawal of antibiotics from poultry feeds created a need for alternative solutions which would influence improvement of health and production traits of broiler chickens. This accelerated the increasing investigations on natural or organic feed additives to achieve the best growth performance, eliminate pathogens and improve feed efficiency. Most of these natural feed additives are products of ancient medicinal system and today the use of natural feed additives as substitute for antibiotics in poultry production has become an area of great interest. Panchagavya and Triphala are one such, traditional formulation described in Ayurveda. Panchagavya is a formulation of animal products used since Vedic times in Indian civilization.

Panchagavyam means mixture of five products of cow namely dung, urine, milk, curd and ghee. According to Ayurveda all the five substances of Panchagavya possess medicinal properties and used to treat various disease conditions in human being either singly or in combination with some other herbs (Dhama et al., 2005). Ancient scriptures such as “Bhel Samhita”, “Kashyap samhita”, “Charak samhita”, “Sushruta Samhita”, “Gad Nigraha” and “Ras Tantra Saar”, have mentioned highly about the divinity and significance of Panchagavya in human life. It was believed that regular

*Corresponding author: Priya J., Assistant Professor, Department of Biochemistry, Ethiraj College for Women, Chennai- 600 008.
consumption of Panchagavya results in the removal of poisons from the body, healing of food addictions, and cure from pollutants and strengthens the immune system. The immunostimulatory, immunomodulatory and anti-inflammatory activity of Panchagavya has also been mentioned in Ayurveda (Chauhan, 2006; Dhama et al., 2005) and the Ayurvedic classics Vishamayavara has indicated the use of Panchagavya to treat malaria and typhoid (Charak, 2000).

Triphala is an ayurvedic powder preparation consisting in equal proportion of dried fruits of three medicinal plants namely, Emblica officinalis (Tamil: Nellikkai), Terminalia chebula and Terminalia bellirica were purchased from local vendor, shade dried and ground into fine powder. Triphala formulation was prepared by mixing the powders of these three fruits in equal proportions (1:1:1) as prescribed in Ayurvedic Formulary of India (2002).

**Experiments design**
Two hundred and forty three number of day old commercial broiler chicken were weighed individually, wing banded and randomly distributed into nine treatments with three replicates of 9 chicks for each treatment. The nine treatment group includes:

T1 - control (fed basal diet),
T2 - basal diet + 10ml panchagavya/ kg diet
T3 - basal diet + 15ml panchagavya/ kg diet
T4 - basal diet + 1g triphala/ kg diet
T5 - basal diet + 2g triphala/ kg diet
T6 - basal diet + 10ml panchagavya + 1g triphala/ kg diet
T7 - basal diet + 15ml panchagavya + 1g triphala/ kg diet
T8 - basal diet + 15ml panchagavya + 1g triphala/ kg diet
T9 - basal diet + 15ml panchagavya + 2g triphala/ kg diet.

The ideal brooding temperature was maintained during the brooding period of first 7 days of age using 200 watt incandescent bulbs. Feed and water were provided ad libitum. Uniform medication and standard management practices were followed for all experimental groups throughout the study period of 6 weeks.

**Preparation of Triphala**
Dried fruits of Emblica officinalis, Terminalia chebula and Terminalia bellirica were purchased from local vendor, shade dried and ground into fine powder. Triphala formulation was prepared by mixing the powders of these three fruits in equal proportions (1:1:1) as prescribed in Ayurvedic Formulary of India (2002).

**Materials and Methods**

**Place of work**
The biological experiment was carried out in the Poultry farm complex, Department of Poultry Science, Veterinary College and Research Institute (VC & RI), Namakkal, Tamilnadu Veterinary and Animal Sciences University (TANUVAS) for a period of 6 weeks. The in vitro research works of panchagavya and triphala was carried out in the Department of Biochemistry, Ethiraj College for Women, Chennai. Tamilnadu and analytical research works were carried out in the Department of Poultry Science, VC & RI, Namakkal, TANUVAS, Tamilnadu, India.

**Experimental broiler diet**
The experimental diet was prepared and fed as per the standards prescribed by the Department of Poultry Science, VCRI, Namakkal to broiler chicken throughout the experiment. Three types of basal diets were used viz. broiler pre starter mash fed from 0 to 2 week of age, broiler starter mash from 3 to 4 weeks of age and broiler finisher mash from 5 to 6 weeks of age (Table 1).

**Preparation of Panchagavya**
Panchagavya was prepared by mixing fresh cow dung-5 kg, Cow urine -3 lit, Cow milk-2 lit, Cow curd-2 lit, Cow ghee-1 lit, Sugarcane juice-3 lit, tender coconut water-3 lit, ripped banana-12 Nos and toddy-2 lit as prescribed by Natarajan (2003). Fresh cow dung was mixed with ghee in the plastic container and kept for three days at room temperature and was thoroughly mixed daily. On fourth day the other ingredients namely cow urine, milk, curd, sugarcane juice, tender coconut water and toddy were added. The mixture was mixed properly and covered with nylon net to prevent entry of flies. The container was then placed in shade and mixed thoroughly twice daily for 15 days.
3. One gram of Trace Minerals contained 54 mg of manganese, 52 mg of zinc, 20 mg of iron, 2 mg of iodine and 1 mg of cobalt

**Body weight (g)**

Individual body weights of the chicks were recorded at weekly intervals to 0.2 g accuracy. The results were expressed in grams (g).

**Feed conversion ratio (FCR)**

The feed consumption was calculated as feed consumption/per bird=total feed consumption (g)/number of birds. The feed conversion ratio was calculated as per the following formula, cumulative feed consumption per bird/body weight gain per bird.

**Cost effectiveness**

The relative economics of supplementing panchagavya and triphala in broiler chicken diets during the experimental period of 0 to 6 weeks of age was calculated based on the actual prevailed cost of the chicken feed and other input cost. The prevailed market selling rate of broiler chicken during the study period was taken for receipts. Based on the above, the selective economics were carried out and expressed as net profit per broiler chicken in different treatments.

**RESULTS AND DISCUSSION**

**Body weight**

The statistical analysis of six week body weight of broiler chicken fed with dietary supplementation of panchagavya and triphala either alone or in combination resulted in a highly significant (P < 0.01) improvement in body weight except PG 15 ml/kg diet. The result obtained in this study are in agreement with earlier research reports of Mathivanan et al. (2006) and Sumithra et al. (2011), who studied in broiler chicken supplementing panchagavya. Sattanathan and Venkatakshmi, (2015) has observed that the cow urine distillate of 0.1 % have resulted in significant increase in growth rate, body length, food utilization and survival rate in Labeo rohita fingerlings. Supplementation of either probiotics or organic acid in broiler researched by Hashemi et al. (2014); Karl et al. (2012) and Denli et al. (2003) agreed with the findings of the present study, but not in accordance with Gunal et al. (2006), who reported that no influence of body weight with the same treatment. The increased bodyweight in panchagavya fed group might be due to presence of beneficial microorganisms, organic acids and increased availability of micronutrients of cow urine. The decreased response of birds group fed higher level of panchagavya alone (PG 15) might be due to decreased feed intake, which might be possibly due to decreased taste of feed due to increased level of panchagavya. The significant improvement (P < 0.01) in sixth week body weight in triphala supplemented group than control is in agreement with the reports of Sanjyal and Sapkota, (2012); Patil et al. (2012); Rindhe et al. (2012); Reddy et al. (2012); Bhattacharyya et al. (2013), who studied the effect of components of triphala such as *Emblica officinalis* and *Terminalia chebula* in broiler chicken, while Sivagurunathan et al. (2012) reported an increase in body weight in fish *T.mossambicus*. However Narayanswamy et al. (2004) and Kumar et al. (2013) observed no effect of supplementing *Emblica officinalis* in body weight of broiler chicken. The increased mean body weight of birds fed triphala might be due to the antioxidant ,antistressor and adaptogenic potential of triphala and its constituent as reported by Babu et al. (2013); Sujatha et al. (2010); Shivaprasad et al. (2008); Dhanalakshmi et al. (2007) and Narayana samy et al. (2004). The increased body weight might be possibly due to the antioxidant and antimicrobial activity of triphala that cause amelioration of stress in birds and exert broad spectrum antimicrobial action throughout the gastrointestinal tract that enhance nutrient utilization.

The broiler chicken fed with combination of panchagavya and triphala recorded higher body weight at six weeks of age than control. The increased mean body weight of the combination groups might be due to the synergetic effect of panchagavya and bio enhancing activity of cow urine (Khanuja, 2002) along with triphala which would have improved the digestion and bioavailability of micro nutrient, macro nutrient and active components of triphala like tannin, phenol, Vitamin C and others. The synergetic activity of panchagavya with herbs in exhibiting antihelmintic and antistress activity has been reported by Kumar et al. (2014); Kumar et al. (2013).Synergetic activity of panchagavya and bio enhancing property of cow urine might contribute to increased antioxidant, antimicrobial and anti stress potential of triphala which might have been influenced the body weight effectively. The mean body weight from 0 to 6 weeks of age as influenced by supplementing different levels of panchagavya and triphala, alone and in combination in broiler chicken is furnished in Table 2.

**Feed consumption**

The present research finding demonstrated that weekly cumulative consumption of broiler chicken belonging to different treatments did not differ significantly up to 2 weeks of age and a significant difference was observed from 3 to 6 weeks of age. The results of this study with panchagavya at 15 ml/kg diet treatment is in accordance with the earlier reports of Mathivanan et al.(2006) who has reported that that reported that no difference in feed consumption due to panchagavya supplementation. Garg et al. (2005) reported that distilled cow urine increased the feed intake in white leghorn layers. The increased feed intake by groups fed PG 10 alone might be attributed to better utilization of nutrients attributed by beneficial micro population of panchagavya. Hence the result of the present study is in accordance with Garg et al. (2005). The possible reason for the decreased feed intake in birds fed higher level of panchagavya (PG 15) could be due to non palatable nature and odour of panchagavya. The increased feed intake in triphala fed group might be due to increased digestion, which attribute to increased feed consumption as triphala is traditionally used for colon cleansing, digestion problems and poor food assimilation (Rinki and Mishra, 2011). Contrary to the result obtained in the present study Rindhe et al. (2012) observed that supplementation of mixture containing *Emblica officinalis* and *Terminalia chebula* (components of Triphala) recorded lower feed consumption than control.
Table 2: Effect of dietary supplementation of Panchagavya (PG) and Triphala (TP) on livability (%) of broiler chicken (Mean ± SE)

<table>
<thead>
<tr>
<th>Treatments/Age in weeks</th>
<th>Control</th>
<th>PG 10</th>
<th>PG 15</th>
<th>TP 1</th>
<th>PG 10 + TP 1</th>
<th>PG 15 + TP 1</th>
<th>PG 10 + TP 2</th>
<th>PG 15 + TP 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hatch</td>
<td>47.96</td>
<td>49.81</td>
<td>48.74</td>
<td>48.84</td>
<td>48.22</td>
<td>46.70</td>
<td>47.25</td>
<td>48.85</td>
</tr>
<tr>
<td>weight</td>
<td>≥ 0.68</td>
<td>≤ 0.70</td>
<td>≥ 0.84</td>
<td>≥ 0.64</td>
<td>≤ 0.70</td>
<td>≤ 0.73</td>
<td>≤ 0.67</td>
<td>≤ 0.73</td>
</tr>
<tr>
<td>First week</td>
<td>165.00*</td>
<td>177.85*</td>
<td>171.44*</td>
<td>172.55*</td>
<td>180.92*</td>
<td>174.03*</td>
<td>174.25*</td>
<td>180.37*</td>
</tr>
<tr>
<td>Second week**</td>
<td>381.29d</td>
<td>419.00a</td>
<td>400.11d</td>
<td>429.29a</td>
<td>442.66a</td>
<td>439.03b</td>
<td>427.44a</td>
<td>444.40a</td>
</tr>
<tr>
<td>Third week**</td>
<td>740.04c</td>
<td>827.70c</td>
<td>755.66c</td>
<td>848.78c</td>
<td>859.15c</td>
<td>845.56c</td>
<td>826.15c</td>
<td>865.78c</td>
</tr>
<tr>
<td>Fourth week</td>
<td>± 3.67</td>
<td>± 27.77</td>
<td>± 27.56</td>
<td>± 3.41</td>
<td>± 27.24</td>
<td>± 31.40</td>
<td>± 22.73</td>
<td>± 30.20</td>
</tr>
<tr>
<td>Fifth week</td>
<td>1708.73b</td>
<td>1890.15b</td>
<td>1720.96b</td>
<td>1902.96b</td>
<td>1944.41b</td>
<td>1907.00b</td>
<td>1832.67b</td>
<td>1944.78b</td>
</tr>
<tr>
<td>Sixth week**</td>
<td>± 9.15</td>
<td>± 111.99</td>
<td>± 37.17</td>
<td>± 28.09</td>
<td>± 17.29</td>
<td>± 103.90</td>
<td>± 73.92</td>
<td>± 61.49</td>
</tr>
</tbody>
</table>

Notes: * Significant (P < 0.05) ** Highly significant (P < 0.01)
Values bearing same superscripts in the same row do not differ significantly.

Table 3: Effect of dietary supplementation of Panchagavya (PG) and Triphala (TP) on cumulative feed consumption (g) of broiler chicken (Mean ± SE)

<table>
<thead>
<tr>
<th>Treatments/Age in weeks</th>
<th>Control</th>
<th>PG 10</th>
<th>PG 15</th>
<th>TP 1</th>
<th>PG 10 + TP 1</th>
<th>PG 15 + TP 1</th>
<th>PG 10 + TP 2</th>
<th>PG 15 + TP 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>First week</td>
<td>141.36c</td>
<td>143.00c</td>
<td>139.62c</td>
<td>145.37c</td>
<td>143.11c</td>
<td>142.72c</td>
<td>145.00c</td>
<td>146.74c</td>
</tr>
<tr>
<td>Second week**</td>
<td>484.56c</td>
<td>502.22c</td>
<td>505.42c</td>
<td>534.20c</td>
<td>501.52c</td>
<td>502.71c</td>
<td>501.52c</td>
<td>495.23c</td>
</tr>
<tr>
<td>Third week**</td>
<td>± 4.87</td>
<td>± 13.17</td>
<td>± 20.42d</td>
<td>± 13.60</td>
<td>± 14.09</td>
<td>± 11.79</td>
<td>± 19.64</td>
<td>± 17.87</td>
</tr>
<tr>
<td>Fourth week**</td>
<td>± 3.46</td>
<td>± 17.56</td>
<td>± 12.90</td>
<td>± 20.48</td>
<td>± 33.34</td>
<td>± 3.96</td>
<td>± 6.07</td>
<td>± 10.14</td>
</tr>
<tr>
<td>Fifth week</td>
<td>1779.20c</td>
<td>1909.30c</td>
<td>1793.20c</td>
<td>1909.20c</td>
<td>1957.00c</td>
<td>1945.90c</td>
<td>1984.80c</td>
<td>1922.10c</td>
</tr>
<tr>
<td>Sixth week**</td>
<td>± 16.9c</td>
<td>± 33.87</td>
<td>± 8.62</td>
<td>± 21.37</td>
<td>± 3.06</td>
<td>± 11.26</td>
<td>± 15.86</td>
<td>± 12.25</td>
</tr>
</tbody>
</table>

Notes: * Significant (P < 0.05) ** Highly significant (P < 0.01)
Values bearing same superscripts in the same row do not differ significantly.

Table 4: Effect of dietary supplementation of Panchagavya (PG) and Triphala (TP) on feed conversion ratio (FCR) of broiler chicken (Mean ± SE)

<table>
<thead>
<tr>
<th>Treatments/Age in weeks</th>
<th>Control</th>
<th>PG 10</th>
<th>PG 15</th>
<th>TP 1</th>
<th>PG 10 + TP 1</th>
<th>PG 15 + TP 1</th>
<th>PG 10 + TP 2</th>
<th>PG 15 + TP 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>First week**</td>
<td>1.21a</td>
<td>1.12b</td>
<td>1.14a</td>
<td>1.14b</td>
<td>1.16c 0.02</td>
<td>1.06c 0.03</td>
<td>1.12c 0.03</td>
<td>1.14c 0.05</td>
</tr>
<tr>
<td>Second week**</td>
<td>1.50±0.02</td>
<td>1.77±0.04</td>
<td>1.56±0.01</td>
<td>1.62±0.04</td>
<td>1.52±0.06</td>
<td>1.63±0.04</td>
<td>1.67±0.07</td>
<td>1.60±0.02</td>
</tr>
<tr>
<td>Third week**</td>
<td>1.49±0.04</td>
<td>1.40±0.02</td>
<td>1.45±0.04</td>
<td>1.44±0.04</td>
<td>1.39±0.03</td>
<td>1.36±0.02</td>
<td>1.36±0.04</td>
<td>1.35±0.05</td>
</tr>
<tr>
<td>Fourth week**</td>
<td>1.52±0.02</td>
<td>1.53±0.02</td>
<td>1.49±0.03</td>
<td>1.51±0.03</td>
<td>1.43±0.01</td>
<td>1.46±0.02</td>
<td>1.47±0.01</td>
<td>1.45±0.03</td>
</tr>
<tr>
<td>Fifth week**</td>
<td>1.61±0.03</td>
<td>1.60±0.02</td>
<td>1.60±0.02</td>
<td>1.57±0.03</td>
<td>1.55±0.00</td>
<td>1.59±0.04</td>
<td>1.57±0.01</td>
<td>1.53±0.01</td>
</tr>
<tr>
<td>Sixth week**</td>
<td>1.73±0.06</td>
<td>1.70±0.08</td>
<td>1.71±0.03</td>
<td>1.65±0.02</td>
<td>1.71±0.05</td>
<td>1.65±0.01</td>
<td>1.62±0.05</td>
<td>1.62±0.03</td>
</tr>
</tbody>
</table>

Notes: * Significant (P < 0.05) ** Highly significant (P < 0.01)
Values bearing same superscripts in the same row do not differ significantly.

Table 5: Effect of dietary supplementation of Panchagavya (PG) and Triphala (TP) on livability (%) of broiler chicken

<table>
<thead>
<tr>
<th>Treatments/Age in weeks</th>
<th>Control</th>
<th>PG 10</th>
<th>PG 15</th>
<th>TP 1</th>
<th>PG 10 + TP 1</th>
<th>PG 15 + TP 1</th>
<th>PG 10 + TP 2</th>
<th>PG 15 + TP 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>First week</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Second week</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Third week</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Fourth week</td>
<td>92.59</td>
<td>96.29</td>
<td>96.29</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Fifth week</td>
<td>85.18</td>
<td>96.29</td>
<td>96.29</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Sixth week</td>
<td>85.18</td>
<td>96.29</td>
<td>96.29</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>
Table 6 Economics of dietary supplementation of Panchagavya (PG) and Triphala (TP) to broiler chicken up to six weeks of age

<table>
<thead>
<tr>
<th>Treatment/ Economies per broiler chicken</th>
<th>Panchagavya (ml), Triphala (g) per kg experimental broiler diet</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Control</td>
</tr>
<tr>
<td>Day Old chick cost Rs.</td>
<td>24.00</td>
</tr>
<tr>
<td>Feed Cost Rs.</td>
<td>115.44</td>
</tr>
<tr>
<td>Panchagavya Cost Rs.</td>
<td>0</td>
</tr>
<tr>
<td>Triphala Cost Rs.</td>
<td>0</td>
</tr>
<tr>
<td>Fixed cost Rs.</td>
<td>10.77</td>
</tr>
<tr>
<td>Production cost Rs.</td>
<td>126.21</td>
</tr>
<tr>
<td>Body weight (g)</td>
<td>2106.27</td>
</tr>
<tr>
<td>Returns Rs.</td>
<td>147.44</td>
</tr>
<tr>
<td>Net profit Rs.</td>
<td>21.23</td>
</tr>
<tr>
<td>Cost benefit ratio</td>
<td>1:1.17</td>
</tr>
</tbody>
</table>

The weekly cumulative feed efficiency from 0 - 6 weeks of age as influenced by dietary supplementation of different levels of panchagavya and triphala alone and in combination is presented in Table 4.

Livability

The 100 % livability was recorded till 4th week in all the treatment including control. The mortality in this trail occurred at random during 5th and 6th week in control with 85.18% and 100 % livability continued in groups fed triphala alone and all possible combinations with panchagavya. The livability recorded in this study could be attributed to dietary supplementation of triphala and its combination with panchagavya. This could be possibility due to the natural antioxidant capacity of triphala and lactic acid bacteria in panchagavya that acts as probiotics. Babu et al. (2013) reported that antioxidant property of Triphala could be attributed to the presence of flavonoids, alkaloids, tannins, saponin glycosides and phenolic compounds. Shivaprasad et al. (2008) and Sharma et al. (2012) also confirmed the antioxidant activity of triphala that possess a strong radical scavenging activity and is considered as good natural antioxidant. Lactobacilli are an extremely important group of probiotics bacteria that inhibit undesirable microflora in the gut and create a healthy equilibrium between beneficial and potentially intestinal pathogen (Tambekar and Bhutada, 2011). Mathivanan et al. (2006) recorded 100 % livability in chicken supplemented with panchagavya, while Gunal et al. (2006) observed no difference in livability between the treatments involving antibiotic growth promoter, probiotics mixture, organic mixture and plant extract in broiler chicken. However Sattanathan and Venkatlakshmi, (2015), recorded 90% survival rate in Labeo rohita fingerlings fed with cow urine distillate. The findings of Reddy et al. (2012) with amla, turmeric and tulsi either alone and in combinations recorded reduced mortality in all herbal treatments like the results obtained in the present study. The weekly livability of broiler influenced by dietary supplementation of different levels of panchagavya and triphala alone and in combination are presented in Table 5.

Cost effectiveness

Supplementation of panchagavya, triphala either alone or in combination in broiler chicken diet up to 6 weeks of age has resulted in increased production cost in all the treatments except PG 15 treatment, which matched the production cost of control chicken. The same trend was observed in returns / bird. It is observed that the net profit was equal in PG 15 and
control. But in all other treatments the net profit per bird was high and in triphala treatment it was the highest and higher than other treatments. The cost benefit ratio worked out in this study was found to be equal in PG 15 and control while in all other treatments it was higher with triphala treatment performed the best followed by panchagavya and triphala combined treatments. Similar to our observation Chaudhary et al. (2014), reported a high profit in broiler chicken fed amla, while Sanjayal and Sapkota (2012) reported that amla supplementation in broiler diet has not improved the profit. Sincere effort to trace earlier works on economics of supplementation of panchagavya, triphala either alone or in combination in boiler chicken could not yield any convincing reports. Hence the result obtained in this study and the economic worked out based on this could not be discussed further. The economics of dietary supplementation of panchagavya and triphala either alone or in all possible combinations in broiler chicken reared up to six week of age is presented the Table: 6

CONCLUSION

The current study revealed the ability to produce safety broiler by dietary supplementation of triphala that recorded increased body weight and 100% livability in broiler chicken when fed alone and in all possible combinations, while PG10 reported increased body weight than PG15 and recorded decreased mortality when compared to control. According to economical aspects diet supplemented with Panchagavya and Triphala either alone or in combination has proved to be economical except PG 15 treatment.

References


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