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Effect of herbal immunomodulator on sensory evaluation in Giriraja birds

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Abstract

The present study was undertaken to evaluate the effects of herbal immunomodulator powder and liquid form (with and without vaccine) comparing with levamisole powder (with and without vaccine) in Giriraja birds from day one to 8 weeks periods to evaluate on sensory evaluation in birds. In a completely randomised design, 525 day old Giriraja chicks were assigned to seven treatments with each treatment group consisting of five replicates with 15 chicks each. The effect of supplementation of different immunomodulators viz levamisole, herbal immunomodulator liquid and powder with and without vaccine did not show significant difference among the treatment groups. The highest mean score for flavor (4.65) was recorded in herbal immunomodulator liquid with vaccine supplemented group (T₇) and significantly compared with other treatment groups (T₁, T₂, T₃, T₄, T₅ and T₆). The highest mean score for taste (4.10) was recorded in herbal immunomodulator powder without vaccine supplemented group (T₄) and other treatment groups exhibited non-significant difference among themselves. The highest mean score recorded for juiciness was 3.95 in herbal immunomodulator powder with vaccine (T₅) and herbal immunomodulator liquid without vaccine supplemented group (T₆) and significantly comparable with 3.65 score recorded in treatment groups (T₁, T₂, and T₄) and non-significantly comparable with treatment groups (T₃ and T₇). There was no significant difference observed in texture and there was no significant difference in overall mean score of different treatment groups.

Keywords: Giriraja, levamisole, immunomodulator, sensory, texture, flavor

1. Introduction

Antibiotics as antimicrobial growth promoters have been widely used in the poultry feed industry. The advantages of using antibiotics as feed additives in terms of growth stimulation and improvement of feed efficiency are well documented [1]. However, the possibility of developing resistance of bacteria, the side effects of using antibiotics as growth promoters in farm animals/poultry, the loss of efficacy of antibiotics as growth stimulants and controlling an outbreak of bacterial diseases have been of concern.

The ban on the use of antibiotics as feed additives has accelerated and led to investigations of alternative feed additives in animal production. As one of the alternatives, herbal extracts are already being used as feed additives to improve the growth performance under intensive management systems [2].

Plant extracts and spices as single compounds or as mixed preparations can play a role in supporting both performance and health status of the animal. Beneficial effects of herbal extracts or active substances in animal nutrition may include the stimulation of appetite and feed intake, the improvement of endogenous digestive enzyme secretion, activation of immune response and antibacterial, antiviral, antioxidant and anti helminthic actions [3].

2. Materials and Methods

A total of 525 straight run day old Giriraja chicks from a single hatch were wing banded for identification, weighed and randomly distributed to seven treatment groups in Completely Randomised Design. Each treatment had five replicates with 15 birds in each replicate. A practical diet comprising of Yellow Maize, Soya bean meal, feed supplements and feed additives without antibiotics and coccidiostat constituted the control diet for all the seven treatment groups. The feed for the treatment group was formulated as per BIS (1994) requirements for all the nutrients except antibiotics and coccidiostat. The experimental birds in T₁ were fed with control diet without any antibiotics and coccidiostat. The birds were administered with ND and IBD vaccines. The experimental birds in T₂ were fed as in T₁ and

supplemented with Levamisole powder. The experimental birds in T₃ were fed as in T₂ and administered vaccines. The experimental birds from T₄ and T₅ were fed with Herbal Immunomodulator preparation in powder form containing Mandukaparni, Yasthi madhu, Guduchi, vriddadaru, Amalaki, Nimba and etc without and with vaccines, respectively and birds from T₆ and T₇ were fed with Herbal Immunomodulator preparation in liquid form containing Himsara, Kasani, Vasaka, Guduchi, Daraksha, Jhavuka, Shatavari etc., without and with administration of vaccines, respectively against ND and IBD.

3. Result

3.1. Sensory evaluation

The results of effect of supplementing herbal immunomodulator liquid and powder (with and without vaccine) and levamisole powder (with and without vaccine) on sensory evaluation of meat are presented in Table 1. Statistical analysis of the data revealed significant influence of flavor, taste, juiciness and non-significant influence of colour, texture and overall quality on supplementation of different immunomodulators.

The highest mean score for color (3.90) recorded in herbal immunomodulator liquid without vaccine supplemented group (T₆) and the lowest 3.40 color score recorded in levamisole without vaccine supplemented group (T₂). The effect of supplementation of different immunomodulators viz levamisole, herbal immunomodulator liquid and powder with and without vaccine didn't show significant difference among the treatment groups (Table 1).

The highest mean score for flavor (4.65) was recorded in herbal immunomodulator liquid with vaccine supplemented group (T₇) and significantly compared with other treatment groups (T₁, T₂, T₃, T₄, T₅ and T₆). The lowest mean flavor score (3.25) was observed in control (T₁) and significantly comparable with herbal immunomodulator liquid without vaccine supplemented group (T₆) and herbal immunomodulator liquid with vaccine supplemented group (T₇). However, non-significantly comparable with other treatment groups (T₂, T₃, T₄ and T₅). However, levamisole supplemented group (T₂ and T₃), herbal immunomodulator powder supplemented group (T₄ and T₅) exhibited non-significant difference between themselves and herbal immunomodulator liquid supplemented group (T₆ and T₇) significantly differed among themselves (Table 1).

The highest mean score for taste (4.10) was recorded in herbal immunomodulator powder without vaccine supplemented

group (T₄) and significantly compared with 3.70 score recorded in control (T₁), 3.65 score recorded in levamisole without vaccine (T₂) and 3.80 score recorded in levamisole with vaccine supplemented group (T₃). However, non-significantly comparable with other treatment groups (T₅, T₆ and T₇). However, levamisole supplemented group (T₂ and T₃), herbal immunomodulator powder supplemented group (T₄ and T₅) and herbal immunomodulator liquid supplemented group (T₆ and T₇) exhibited non-significant difference among themselves (Table 1).

The highest mean score recorded for juiciness was 3.95 in herbal immunomodulator powder with vaccine (T₅) and herbal immunomodulator liquid without vaccine supplemented group (T₆) and significantly comparable with 3.65 score recorded in treatment groups (T₁, T₂, and T₄) and non-significantly comparable with treatment groups (T₃ and T₇). However, levamisole supplemented group (T₂ and T₃), herbal immunomodulator liquid supplemented group (T₆ and T₇) were non-significantly comparable among themselves and herbal immunomodulator powder supplemented group (T₄ and T₅) exhibited significant difference among themselves (Table 1).

The highest mean score recorded for texture was 3.80 in herbal immunomodulator powder without vaccine supplemented group (T₄), herbal immunomodulator powder with vaccine supplemented group (T₅), herbal immunomodulator liquid without vaccine (T₆) and herbal immunomodulator liquid with vaccine (T₇) and 3.65 texture score was observed in control (T₁) and levamisole powder with vaccine supplemented group (T₃) and 3.70 score was recorded in levamisole without vaccine supplemented group (T₂). However, levamisole powder supplemented group (T₂ and T₃), herbal immunomodulator liquid supplemented group (T₆ and T₇) and herbal immunomodulator powder supplemented group (T₄ and T₅) were non-significantly comparable among themselves (Table 1).

The overall mean score of 3.85 was observed in control (T₁), herbal immunomodulator liquid without vaccine (T₆) and herbal immunomodulator liquid with vaccine (T₇) and 3.80 observed in levamisole powder without vaccine (T₂) and levamisole powder with vaccine (T₃) and herbal immunomodulator powder with vaccine (T₅) supplemented group. The overall score of 3.90 was observed in herbal immunomodulator powder without vaccine (T₄). However, there was no significant difference in overall mean score of different treatment groups (Table 1).

Table 1: Effect of herbal immunomodulator and levamisole on Sensory evaluation in Giriraja birds

Treatment	Colour	Flavour	Taste	Juiciness	Texture	Overall
T ₁ Control	3.70 ±0.00	3.25±0.05 ^c	3.70±0.00 ^c	3.65±0.05 ^b	3.65 ±0.05	3.85±0.05
T ₂ Control+ levamisole without vaccine	3.40 ±0.00	3.40±0.20 ^{bc}	3.65±0.05 ^c	3.65±0.05 ^b	3.70 ±0.00	3.80±0.00
T ₃ Control+ levamisole with vaccine	3.70 ±0.10	3.60±0.20 ^{bc}	3.80±0.10 ^{bc}	3.75±0.15 ^{ab}	3.65 ±0.05	3.80±0.00
T ₄ Control+ HIM powder without vaccine	3.80 ±0.20	3.35±0.05 ^{bc}	4.10±0.10 ^a	3.65±0.05 ^b	3.80 ±0.10	3.90±0.00
T ₅ Control+ HIM powder with vaccine	3.75 ±0.15	3.80±0.00 ^{bc}	4.00±0.00 ^{ab}	3.95±0.05 ^a	3.80 ±0.10	3.80±0.00
T ₆ Control+ HIM liquid without vaccine	3.90 ±0.00	3.95±0.35 ^b	4.05±0.05 ^a	3.95±0.05 ^a	3.80 ±0.00	3.85±0.05
T ₇ Control+ HIM liquid with vaccine	3.70 ±0.30	4.65±0.05 ^a	4.05±0.05 ^a	3.85±0.05 ^{ab}	3.80 ±0.00	3.85±0.05

Means bearing at least one common superscript column wise does not differ significantly (P≤0.05)

4. Discussion

4.1. Sensory evaluation

The results of sensory evaluation revealed non-significant difference among treatment groups due to dietary supplementation of herbal immunomodulator powder and liquid (with and without vaccine) and levamisole powder

(with and without vaccine). The overall acceptability score was almost similar in all the treatment groups which clearly indicate that dietary supplementation of herbal immunomodulator and levamisole in different form had no effect on sensory evaluation score of meat of birds. However, the score card values for sensory evaluation are similar to that

of the findings of [4] who observed that dietary inclusion of turmeric at 0.5 per cent level in broiler diets did not reveal any abnormal odour, flavor and appearance of the meat.

The results of the present study are in contrary with the findings of [5] who revealed that there was a significant improvement in the sensory and color attributes of the carcass traits in vitamin C and Ayucee liquid supplemented group as compared to untreated control.

5. Conclusion

The results of the present study revealed that significant influence of flavor, taste, juiciness and non-significant influence of colour, texture and overall quality on supplementation of herbal immunomodulators with or without vaccines.

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