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Research Article

Inclusion of Laurel Oil (*Laurus Nobilis*) in the Feeding of Broiled Chickens

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Abstract

In order to evaluate the effect of the inclusion of laurel oil (*Laurus nobilis*) in the feed of broiler chickens on body weight gain and feed conversion in a traditional poultry farm, the following experiment was carried out. For this, 80 broiler chickens one-day-old and average weight 40 gr was used, randomly separated into two groups. In one of them, Lot 1 or "Treatment", the animals were fed with an artisanal formulation that included Laurel Oil (*Laurus nobilis*) and Lot 2 or "Control", fed with a commercial formulation. At the end of the experiment, that lasted 40 days, the results obtained were as follows: In terms of average weight gain; in Lot 1 (treatment) it was 1.331 kg and Lot 2 (control) 1.977 kg; ($p < 0.05$). The feed conversion was 2.72 in the treatment lot and 1.7 in the control lot.

Keywords: *Laurel Oil; Essencial Oil; Broiler Chickens; Production Parameters*

Introduction

Organic acids, enzymes, prebiotics, probiotics and essential oils (EO) among other products Have been proposed as alternatives to the use of antibiotic growth promoters as they are effective, economically viable and freely available in the national market for inclusion in animal feed (Food and Agriculture Organization of the United Nations, 2010) creating opportunities for scientific research and stimulating the industry to invest in these new products [10].

[3] (citing [13,12]) mentions that there are many studies on the chemical compo-sition of the essential oil obtained from leaves of Mediterranean and European L.nobilis. Riazet., *et al.* (1989), the main componentsof the essential oil were cineole (44.1%), eugenol (15.2%), sabinene (6.2%), 4-terpineol (3.6%), *α-pinene (2.7%), methyl eugenol (2.5%), α*-terpin-eol (2.2%), and-pinene (2.1%).

The chemical composition of the essential oil (EO) from leaves of L. nobilis, collected in Southern Italy, was studied by GC and GC-MS. In all, 55 compounds were identified, accounting for 91.6% of the total oil. 1,8-Cineole (31.9%), sabinene (12.2%), and linalool (10.2%) were the main components. Antimicrobial and antifungal activities of EO and 1,8-cineole were determined *In vitro* [5] However, different studies have reported important differences in the chemical composition of the oil according to the variety, cultivation methods, time of harvest and geographical origin of the plant [14].

Many natural compounds extracted from plants have demonstrated biological activities and among these, volatile oils from aromatic and medicinal plants are particularly interesting as described by many researchers [2].

In general, essential oils are volatile aromatic chemical compounds, which are usually produced and stored in the secretory channels of plants and provide them protection from predators (Burt, 2004; Angioni., *et al.,* 2006; Calsamiglia., *et al*., 2007mentioning by [11]). These oils contain the substances responsible for plant aroma and are important in the cosmetic (perfumes and flavorings), food (condiments and flavorings) and pharmaceutical industries, and in recent years have also been used in animal production [11].

Essential oils appear to be natural alternatives to the use of growth-promoter antibiotic additives in animal feeds. In fact, some experiments have demonstrated that the use of some plant extracts in swine and poultry increase daily weight gain similar to the results of antibiotic additives [4].

There is a strong need for effective antioxidants from natural source as alternatives of commercial antioxidants. Research shows that the main compounds of the essential oils have antioxidant activity [15]. Also, recent studies focused on antimicrobial properties of essential oils (Nakamura., *et al.,* 2004) cited by [8].

Materials and Methods

The research work was carried out in the Department of San Pedro, Paraguay, from June to July 2021 in a conventional (non-automated) poultry house. Eighty one-day-old Cobb chicks with an average weight of 40 g were randomly selected and divided into two groups of 40 each.

Lot 1 or Treatment: with inclusion of 5% Laurel Oil in the formulation (handmade).

Lot 2 or Control: commercial formulation.

Both formulations were similar in terms of chemical composition for all categories (starter, growth and finishing).

The house was of conventional type, with canvas curtains, wood heaters, feeders and drinkers according to animal density and week of the cycle. A bedding of 15 cm of rice husk was placed on the floor. The chicks were received in protective circles inside hoods at a temperature of 32° - 33°C (32° - 33°F).

All animals were subjected to the same management and sanitary plan (Newcastle and Gumboro at day 7 and 14) for a period of 40 days.

Daily control of bedding and fecal matter, daily cleaning of drinking troughs, weighing of feed offered, refusal and weekly weighing of animals (total of 7 weighings) were carried out.

Results and Discussion

Table 1 shows average body weight gain per animal obtained according to the treatments.

Lot	Body Weight Gain	P-value
Treatment (inclusion of Laurel Oil)	1.331	p< 0,001
Control	1.977	p< 0,001

Table 1: *Body weight gain (kg.) control and treatment lot in San Pedro Department.*

Body weight gain was 1.331 kg for treatment Lot (inclusion of Laurel Oil in the formulation) and 1.977 kg, for the control lot (commercial formulation), With an average difference of 0.646 kg ($p < 0,0001$).

Obtained weight in both lots was lower than expected in a production system, this could be due to the fact that the chickens were housed in a conventional warehouse (without automation).

The difference between both groups could be a result of the artisanal method that was used to create the formulation that included laurel oil, therefore the particles size and the correct mixture of the ingredients could have influenced the results. In the treatment group a disparity on weight gain was detected [1] Reported that animals treated with clove oil had increase body weight In comparison with controls and those treated with antibiotics, when a dose of up to 600 mg/kg per day was added in their diet. These results differ those from obtained in the present work, and this difference may be due to the protocol used apart from the other reasons previously mentioned.

[9] Mentioned that compounds such as thymol, eugenol, carvacrol, curcumin and pipeline or oregano and anise extracts together with orange peel contribute to the improvement of intestinal health by increasing digestibility, maintenance and improvement of their tissues.

Table 2 shows the total feed intake per lot and feed conversion, both expressed in kilograms.

Lot	Feed intake	Feed conversion
Tratamiento	121.29	2,70
Control	134.376	1,70

Table 2: *Feed intake and feed conversion per lot (kg.).*

Regarding total intake, there were differences between the control and treatment groups. The intake was lower in the treatment group, this group obtained a feed conversion ratio of 2.70, while the control group obtained a feed conversion ratio of 1.70. The lower intake may be a consequence of the particles size, which was not homogeneous; the animals wasted a bigger amount of feed. Feed intake will vary according to the nutrient content of the feed, the temperature of the poultry house, the production rate and body weight (Hy-Line International, 2006) cited by [6].

Conclusion

Considering the conditions in which this research was conducted, the following results were obtained: final weights with a difference among the lots of treatment which resulted with a final weight of (1,331 kg.), in comparison with the control lot which resulted with a final weight of (1,977 kg.), Feed conversion ratio of 2.70 for the treatment lot and 1,70 for the control lot respectively.

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