

## THE EFFECT OF ESSENTIAL OIL OF ROSEMARY (*ROSMARINUS OFFICINALIS*) ON TO THE BROILERS GROWING PERFORMANCE

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### Abstract

*In recent years medicinal plants have been studied from the perspective of their use as growth promoters and replacement of antibiotics. The aim of the research was to determine the effect of different levels of oil on growth and development, increase of weight gain and feed conversion to increase growth, water consumption and sustainability of chicken meat. Were used 250 broiler chicken Ross 308 distributed in five lots, L1 (0.1%), L2 (0.5%), L3 (1%) L4 (1.5%) and M (0.3% avilamycin). The experiment during 42 days. The data obtained were statistically processed. For the average body weight and growth rate the best values were recorded in the lot with antibiotic and in the lot with 0.5% oil, being higher with 2.43% (L1), 4.97% (L3), and 5.9% (L4), feed conversion in growth rate was approximately the same for lots M, L1, L3, and L4, the values recorded were different depending on the level and type of additive used, the best results were recorded in the lot L2 being higher by about 5% compared with M. The best values for water consumption were recorded in the lot L2 with 6.39% higher compared to the lot M. The lowest values of mortality percentage were recorded in the L2. In conclusion, the level of 0.5% essential oil of rosemary can be considered a possible natural growth promoter for chicken broilers.*

**Keywords:** essential oil, alternatives, antibiotics, natural, broilers

### INTRODUCTION

The last years of research on growth of birds and not only. These have focused on finding some additives to ensure proper growth and development while protecting the body against diseases which may harm the health and welfare. Medicinal plants were investigated from the perspective of their use as biostimulators growth and replacement of antibiotics. Medicinal plants used in various forms and additives (additives botany) acting respectively at maintaining digestive balance of existing flora and a functional role related to increasing specific enzyme secretion and an important antibacterial role (1, 5). These issues are related directly to obtain the growth performance of meat chickens. Essential oils (volatile oils) were regarded as true activators of digestive secretions (7), the principal components of the type contained timol, cavocrol, engenol and not only. Active components of essential oils have a strong antibacterian, antifungal, antiparazitar, antioxidant effect etc.. Medicinal plants were

taken in the study as possible natural growth promoters in broiler chickens and replacement of antibiotics. Different levels of essential oil have been proposed to be used in the basic recipe to determine their effect on growth performance of chicken meat in comparison with use of antibiotic (1, 9).

### MATERIAL AND METHOD.

There were used 250 day-old chicks of Ross 308 hybrid, separated in five batches of 50 chickens each. Because of were used five types of food, depending on the factor tested antibiotic or essential oils incorporated into a recipe of basic. This at five lots of 4 was administered essential oil of rosemary in the level of 0.1% (L1), 0.5% (L2), 1% (L3) and 1.5% (L4) and a lot was used antibiotic avilamycin 0.3% (M). Rosemary essential oil was dissolved in vegetable oil and incorporated into daily meals. The basic recipe built **made up of** specific feed and chicken meat with regard to each period of

growth and was administered at libitum, in the same way it was done for the water and administered. Ingredients and chemical

composition of the basic recipe are presented in table 1.

Table 1  
 Structure and nutritional composition of standard diets

Feed ingredients	UM	0-14 day	15-28 day	29-42 day
Corn	%	61.00	65.00	65.00
Soybean meal	%	28.00	23.00	23.00
Full-fat soybean	%	2.00	4.00	7.00
San flowers	%	1	-	-
Gluten de porumb	%	1.00	1.00	-
Fish meal	%	400	3.50	-
Vegetable oil	%	-	0.50	1.50
L-Lysine	%	0.05	0.10	0.05
DL- methionine	%	0.20	0.20	0.20
Carbonat de calciu	%	0.45	0.45	0.75
Dicalcium phosphate	%	1.10	1.00	1.15
Salt	%	0.15	0.20	0.30
Vitamin and minerals premix	%	1.00	1.00	1.00
Kemzyme VP dry	%	0.05	0.05	0.05
Total	%	100	100	100
Analysis				
kcal /kg		2995	3100	3153
Crude protein	%	23	20	18
Crude fiber	%	3.25	3.33	3.01
Eter extract	%	4.51	4,01	6,01
Ash	%	6.12	6.05	6.33
Lysine	%	1.36	1.17	1.00
Methionine +Cistine	%	1.00	0.90	0.82
Ca	%	1.03	0.95	0.91
P	%	0.76	0.66	0.61

## RESULTS AND DISCUSSION

Results obtained after the experiment are presented in table 2. Rosemary oil effect on growth in weight has established that the best results were recorded in group L2 (52.1 g/day) and group M (with antibiotic). Increased weight gain at chickens in the other groups had values of approx. 51.7 g/day (L3), 50.7 g/day (L1) and 49.5 g/day (L4). It may be notice that the results obtained from the batch of chicken with 0.5% essential oil was the best, being much better than 2.43% with L1, L3 to L4 and 4.97% to 5.9% compared with the same group M. To increase conversion of feed into growth the best values were recorded at L2 group wich were better by about 5% compared with group M to determine statistically significant differences ( $p < 0.05$ ) compared with the group. The other lots with the essential oil

the values were higher than the group with approx. 1% (L3), 1.1% (L4) and 1.7% (L1). As regards the use of water seen through the water/food, the best results were obtained in batch L1 values were lower by 6.39% compared with group M. Also at all batches with essential oil of this report were lower than group M. For the mortality index values from batches of essential oil were lower at L1, L2(1%), followed by L3 and L4 (2% ), and M (3%). The results show the positive effect on the essential oil of rosemary over chickens growth and in use of food for growing them. Best values were recorded in group L2 (0.5% essential oil), concluding that at this level it can be used in raising chickens for meat the other lots were classified as differences of up to 5% compared to batch with antibiotic.

Table 2  
 The effects of different level of rosmarin essential oil on overall performance of broiler chickens

Results	M*	L1	L2	L3	L4
	0.3%	0.1 %	0.5 %	1%	1.5 %
Initial average weight g	46.8	46.30	46.2	46.2	46.4
Final average weight 42 day g	2232.0	2177.9	2235.0	2188.2	2100
Daily weight gain g/bird/day	52.00	50.7	52.1	51.0	49.5
FCR g feed/g gain	1.81 <sup>a</sup>	1.78	1.72 <sup>b</sup>	1.80	1.83
Water/feed	2.35	2.22	2.20	2.28	2.27
Mortality %	4%	1%	1%	2%	2%

\* antibiotics ab; (p<0.05) the values differ significantly

The varying levels of essential oil used gives an indication that always a higher concentration of essential oil can cause at obtaining the best results depending on the amount of chemical components contained. We can see similarities of these results or better than the antibiotic used after the use of rosemary essential oil content in the borneol, camphor, pinen, etc. rozamonic acid. When using concentrations of 0.5% we see a good effect of stimulating the digestive enzymes, this proceeding from the value of good nutrition to increase growth. Similar results were obtained by other researchers on the effect of rosemary on growth performance and values of food at a level of fat and low cholesterol (2, 3, 5); use of rosemary essential oil in combination with other essential oils have proved a very good effect on growth performance of meat chickens (4, 5, 7, 9).

## CONCLUSIONS

Research undertaken has shown that the use of essential oil of rosemary has a good result in good growth performance of meat chickens and a good use of nutrition in growth for growth. Using the 0.5% rise to achieve the best results, values were similar and better than the antibiotic used. Following the results reported it can be affirmed that the use of 0.5% essential oil of rosemary in the chicken feed may be considered a potential growth promoter in the growth of meat chickens.

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