



## Antimicrobial Effect of Oregano (*Origanum vulgare*), Tea Tree (*Melaleuca alternifolia*) Essential Oils and Probiotics in Broilers

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**Abstract:** The purpose of this paper was to establish the antimicrobial effect of oregano essential oil (OEO) and tea tree (TEO) and the probiotic in broilers.

**Keywords:** broiler, OEO, TEO, probiotic, bacteria

### • Introduction

Poultry production plays a major role in animal protein supply and employment to teeming population. However, poultry industry is encountering disease problems which needs to be resolved continuously. The use of antibiotics and antimicrobial growth promoters (AGPs) in monogastric nutrition results in many deliberations, comprising of threats to health and negative environmental impacts, as such new innovative method are required to control diseases in the replacement of antibiotics. Among the different alternative substitutes for antibiotics, the use of essential oils (EO) has been shown to have its success for pre- and post-harvest antimicrobial schemes.

Current study has shown that OEO is an antioxidant, anti-inflammatory, antidiabetic, and cancer-suppressing agent. OEO also reveals antimicrobial activity against some microorganisms. TEO has been used in poultry nutrition for its antimicrobial, antibacterial, antioxidant and digestive stimulant properties.

### • Material and method

240 broiler „ROSS 308” were equally divided into eight groups: T0-control and T1 to T7 experimental groups. T0-combined feed without essential oils and probiotic; T1-combined feed with OEO 250 mg/kg; T2-TEO 250 mg/kg combined feed; T3- 125 mg OEO and 125 mg TEO /kg combined feed ; T4 compound feed from T1 + probiotic 500 mg/kg, T5 combined feed from T2 + probiotic, T6 feed from T3 + probiotic and T7 compound feed in which the probiotic was incorporated.

At 35 days of age, bioproductive indices were determined and presented in another paper. Also, a number of 6 broilers from each group were slaughter and cecal contents were collected. Was determined the total bacterial count (TBC) and the *E. coli* count. Standard methods were used and the total number of bacteria per milliliter expressed as CFU/ml was calculated.

The LSD test was used for statistical processing.

### • Results and discussions

The results of this study are presented in figures 1 and 2.

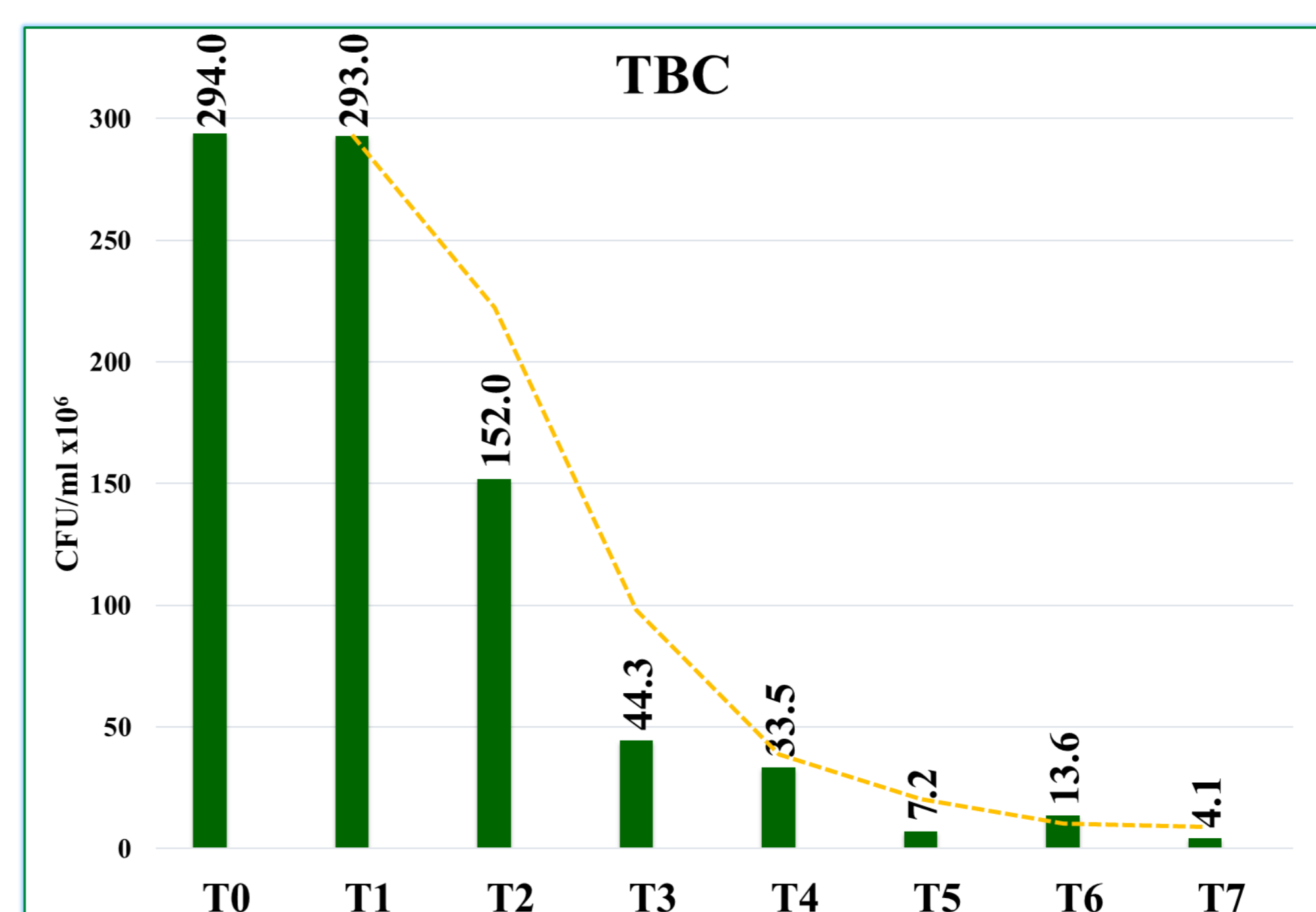


Figure 1. The dynamic of total bacteria count

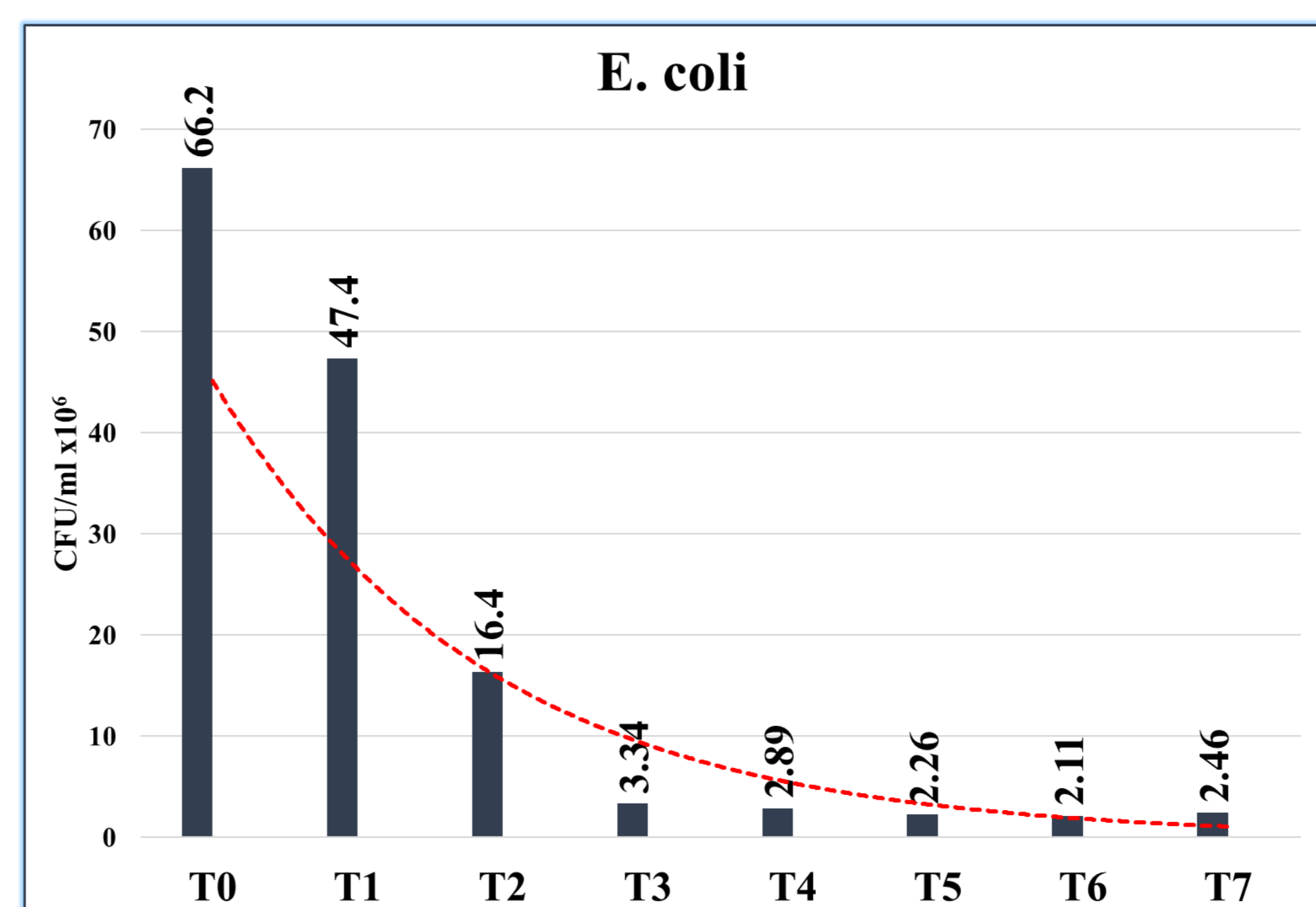


Figure 2. The dynamic of *E. coli*

Following the statistical processing using the LSD test, it was found that in terms of *E. coli*, the differences were significant between the control T0 and all the other experimental groups ( $p < 0.05$ ).

For TBC, the differences between the experimental groups were insignificant ( $p > 0.05$ ).

### • Conclusions

The administration of oregano essential oil and tea tree essential oil as well as the probiotic caused a decrease in the number of *E. coli* in all experimental groups.