

**STUDY ON COMBINATION EFFECT OF *TRACHYSPERMUM AMMI*
AND *TEUCRIUM POLIUM* ESSENTIAL OILS ON *E. COLI* O157 H7
AND *STAPHYLOCOCCUS AUREUS***

A. Jebelli Javan^{1*}, M. Dalijeh², H. Gandomi², A. Akhondzadeh²

¹⁾ Semnan University, Faculty of Veterinary Medicine,
Dept of Food Hygiene, Semnan, Iran

²⁾ University of Tehran, Faculty of Veterinary Medicine,
Dept of Food Hygiene, Tehran, Iran

In this study the effect of *Trachyspermum ammi* and *Teucrium polium* on bacterial food-borne pathogens including *E. coli* O157: H7 and *Staphylococcus aureus* was evaluated, individually and in combination, using micro-dilution broth method. Moreover, the bacterial growth curve affected by EOs, individually or in combination, was analyzed. The minimum inhibitory concentration (MIC) of both *T. ammi* and *T. polium* EOs against *E. coli* was estimated 1000 ppm. Furthermore, the MICs of *T. ammi* and *T. polium* EOs against *S. aureus* were assessed 1000 and 1500 ppm, respectively. Combination of EOs showed a synergistic effect against both bacteria since combination of 500 ppm of *T. ammi* EO and 250 ppm of *T. polium* EO was inhibitory against *E. coli*, while concentration of 250 ppm of *T. ammi* EO in combination with 500 ppm of *T. polium* inhibited growth of *S. aureus*. The results of growth curve analysis showed that combination usage of these two essential oils was effective in increasing the lag phase of mentioned bacterial pathogens and this effect is of importance in food microbiology. In conclusion, *T. ammi*, and *T. polium* showed to be effective against bacterial growth, especially when are used in combination, and their potential application in food systems may be suggested.

Keywords: Combination effect, *Trachyspermum ammi*, *Teucrium polium*, essential oil, food borne pathogens

* Corresponding author: jbellija@profs.semnan.ac.ir