

## The evaluation of chemical composition, antimicrobial activity and drug interaction in the essential oil of *Artemisia sieberi*

**Authors:**

**Maryam Moazen Zade<sup>1</sup>  
and Mohammad Dakhili<sup>2</sup>**

**Institution:**

1. M.Sc Student, Department of Microbiology, Faculty of Science, Islamic Azad University, Qom Branch, Qom, Iran

2. Associate Professor of Mycology, Faculty of Medical Science, Islamic Azad University, Qom Branch, Qom, Iran

**Corresponding author:  
Mohammad Dakhili**

**ABSTRACT:**

Problems in the treatment of infections caused by antibiotic-resistant strains led to vast studies on new antimicrobial drugs, including medicinal plants. *Artemisia* has been used in the traditional medicine for a variety of clinical disease including treatment of malaria; suppress inflammation and infectious diseases. The aim of this study was to investigate the antimicrobial effects of essential oil from *Artemisia sieberi* and to compare its drug interaction with other antibiotics. In this study, essential oil was extracted from the aerial parts of *Artemisia sieberi* and its components were analyzed, then *in vitro* antibacterial properties were evaluated. Antibacterial effect of essential oil derived from the plant was analysed against six strains of bacteria (*Escherichia coli*, *Klebsiella pneumoniae*, *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Enterococcus faecalis* and *Bacillus cereus*) by disc diffusion method and the Minimum Inhibitory Concentration (MIC) and Minimum Bactericidal Concentration (MBC) were determined. The synergistic and antagonistic effects of this plant with seven standard antibiotics (cephalothin, oxacillin, gentamycin, ampicillin, vancomycin, erythromycin and piperacillin) were analyzed. In this study, camphor (25.17%) had the highest combination of essential oil and plant oil in the concentration of 0.00015 mg/ml and showed inhibitory effect against *Escherichia coli*. According to the results of this study, essential oil has inhibitory effect on the growth of pathogenic bacteria. Therefore, for the clinical application of essential oil, further researches are necessary.

**Keywords:**

Antibacterial, Antibiotic, *Artemisia sieberi*, Drug interactions, Essential oil.