

## ANTIOXYDANT AND ANTI-INFLAMMATORY ACTIVITIES OF *Teucrium polium* L. FROM NORTH-CENTRAL ALGERIA

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### Introduction & Objectives:

*Teucrium polium* L., also known as wild germander, is a perennial medicinal plant from *Lamiaceae* family. This plant is native to the Mediterranean region and it is a widely used in traditional medicine for its hypolipidemic, hypoglycemic, anti-nociceptive, and anti-inflammatory properties<sup>1</sup>. The antioxidant and anti-inflammatory activities of the Algerian *Teucrium polium* L. and its potential as a natural food preservative or in the pharmaceutical industry were investigated in this study.

### Methodology (Material and methods):

The dried leaves of *Teucrium polium* (*T. polium*) were subjected to hydrodistillation for about 02 hours in order to extract the essential oils. *T. polium* essential oil's biological activities were assessed *in vitro* using two different methods for each activity. The antioxidant properties were determined using the 2,2-diphenyl-1-picryl-hydrazyl (DPPH) free radical scavenging activity method and hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) scavenging activity method. While the anti-inflammatory properties were evaluated using human red blood cell membrane stabilization (HRBC) and Bovine Serum Albumin (BSA) methods. Ascorbic acid and diclofenac sodium were used as positive controls for antioxidant and anti-inflammatory tests respectively.

### Results and Discussion:

The hydrodistillation of the dried *T. polium* aerial parts produced 0.21% (w/w) of a white yellow essential oil. This value falls within the 0.14% to 0.6% range reported in the literature<sup>2</sup>. The different concentrations of essential oil samples demonstrated a significant anti-inflammatory potential, in a dose dependent manner. At 1000 µg/ml, the extract exhibited 77.69% and 78.69% activity in HRBC and BSA assays respectively. *T. polium* essential oils presented a moderate antioxidant capacity. The highest value was noted at 1000 µg/ml with 59.30% of activity against the DPPH free radicals and 63.77% of activity against H<sub>2</sub>O<sub>2</sub>. The activity of *T. polium* essential oil concentrations was significantly lower than that of the standards used.

### Conclusion:

Overall, these findings have demonstrated the remarkable antioxidant capacity and strong anti-inflammatory effect of Algerian wild germander essential oil, but further research into its potential in foods and pharmaceutical products is required.

**Keywords:** *Teucrium polium* L., essential oil, medicinal plant, hydrodistillation, antioxidant, anti-inflammatory.

