

EVALUATION OF THE ANTIFUNGAL POTENTIAL OF ANETHUM GRAVEOLENS L ESSENTIAL OIL

MAZERI Amina¹ *, KHALDI Achraf¹, MEHDI Kheira¹

¹ Laboratory of valorization of vegetal resource and food security in semi-arid areas, south west of Algeria, Independence Street B.P 417- 08000 Bechar- Algeria , Tahri Mohammed University of Bechar , Algeria, faculty of natural science and life, department of biology

Introduction

Significant efforts have been made in order to control food degradation by fungi, with the application of synthetic fungicides being the most widely utilized storage approach. However, the use of these chemicals has led to a number of health and environmental problems. Plant essential oils may provide alternatives to presently used fungicidal agents because of their contact inhibition and volatile effect. They are a rich source of control of different fungal species and can exert powerful antifungal activities.

Therefore, this study aimed to assess in vitro the antifungal activity of the essential oil from the seeds of *Anethum graveolens* growing wild in southwest Algeria

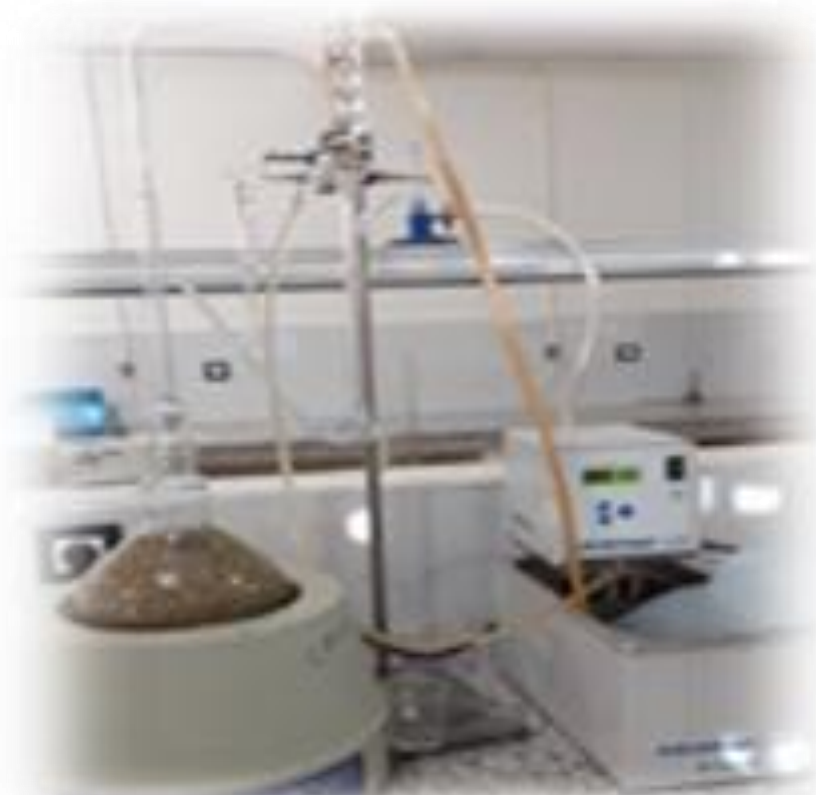
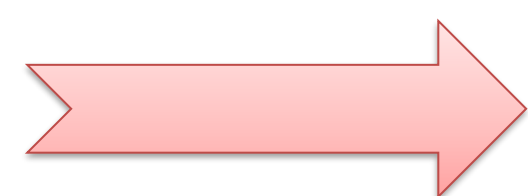
Methodology

❖ Plant material and Extraction of essential oil



A,graveolens

Extraction



Hydrodistillation

❖ Antifungal activity of essential oil

The minimum inhibitory concentration (MIC) of EO was determined by the contact direct method. Because of non-miscibility of EO with water and thus the culture medium, emulsification performed with a 0.2% agar solution (Amarti and al., 2010). The dilutions ranging from 1/10 to 1/700 prepared in the agar solution. In test tubes each one containing 14 ml of solid medium PDA aseptically added 1 ml of each dilution in order to obtain final concentrations ranging from 1/100 to 1/7000 (v/v). Then inoculated with sporal solution, and incubated at 25°C for 7 days.

To determine the minimal fungicidal concentration (MFC), inhibited fungal discs from oil-treated sets were re-inoculated on new PDA medium

Results and Discussion

Table 1, MIC and MFC of *A,graveolens* EO

	<i>A,flavus</i>	<i>P,expansum</i>	<i>F,oxysporum</i> <i>f,sp albedinis</i>
Control	+++	+++	+++
1/7000	+++	+++	+++
1/2000	+++	+++	++
1/500	++	++	-
1/300	++	++	- (f)
1/150	- (f)	- (f)	-
1/100	-	-	-

- : inhibition / + : low growth / ++ : medium growth
+++ : strong growth / (f) : fungicidal effect

According to **Akono et al. (2012)** the biological activity of an essential oil is linked to its chemical composition,

Jianu et al (2012), reported that the presence of D-carvone and D-limonene in the chemical profile of the essential oil of *Anethum graveolens* L generated strong antifungal activity against *Aspergillus niger*, *Penicillium* and *Aspergillus flavus*.

Conclusion

These findings confirm the fungicidal effect of *A. graveolens* essential oil and their potential use as safe alternatives to synthetic fungicides for control of pathogen fungi in food product.

International Conference on
Sustainable Agriculture and the
Environment

Mostaganem May 27 and 28, 2024