

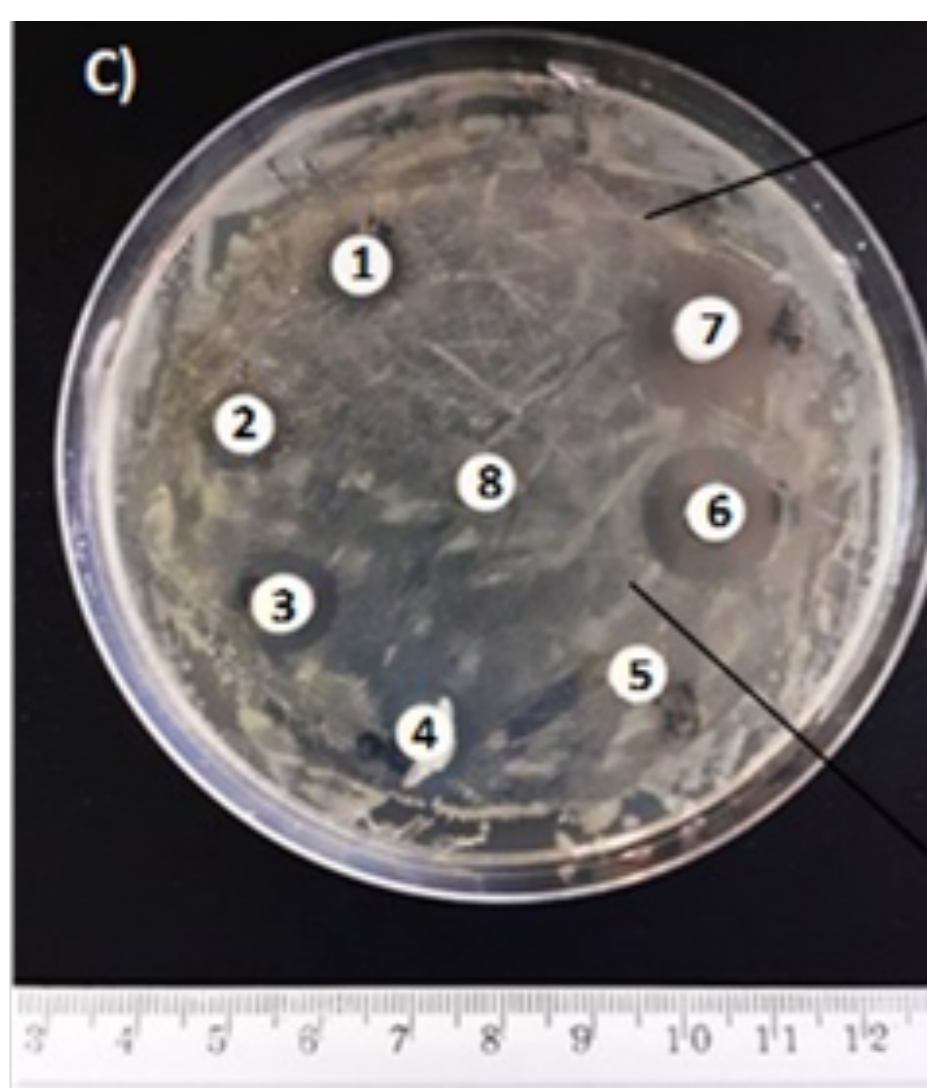
prof. dr. Lavinia Muresan, prof. Ioana Mihacea | "Gheorghe Șincai" Highschool | Cluj-Napoca | România

DEVELOPMENT OF A FENNEL OIL – BASED OINTMENT AND ANALYSIS OF ITS ANTI-ACNE EFFECT

Acne, affecting 680 million globally, often results from Cutibacterium acnes infestation. Fennel, with its antibacterial and anti-inflammatory properties, inspired two ointment formulations.

CREAM DEVELOPMENT

Volatile fennel oil, incorporated into cream and gel formulations, showed antibacterial properties against Escherichia coli, Staphylococcus aureus, and Cutibacterium acnes. Chromatography identified Trans-anethole as the main anti-inflammatory compound. An online survey indicated consumer interest. The gel formulation outperformed the generic cream, with inhibition zones of 12-15 mm diameter, suggesting its efficacy in acne treatment.



Sample	Amount	Diameter of inhibition zone (mm)		
		<i>E. coli</i>	<i>S. aureus</i>	<i>C. acnes</i>
1	Fennel Oil - 5 μ g	16	0	8
2	Fennel Oil - 10 μ g	18	0	9
3	Fennel Oil - 20 μ g	>18	0	11
4	Fennel Oil - 30 μ g	>18	0	12
5	Cream, 5% FO ~ 30 μ g	0	0	0
6	Gel, 5% FO ~ 30 μg	21	9	15
7	Generic brand cream, no FO ~ 30 μ g	21	18	18*
8	H2O (control) - 30 μ g	0	0	0

* After 3 days we observed a decrease of the inhibition zone to 11 mm for the generic brand cream, while the diameter for our gel formulation remained at 15 mm

Conclusion: the project confirmed and underlined fennel's beneficial anti-acne effects, opening the possibility of a new way to treat acne. The formulation with the best results is the hydrating gel with 5% fennel oil.

