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## PHARMACEUTICAL BIOTECHNOLOGY

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**A study on chemical composition and antifungal activity of essential oil from *Thymus caramanicus*, *Thymus daenensis* and *Ziziphora clinopodioides***Khorasani S<sup>1</sup>, Azizi M H<sup>2</sup>, Barzegar M<sup>2</sup> and Hamidi Esfahani Z<sup>2</sup><sup>1</sup>Shahid Bahonar University of Kerman, Iran<sup>2</sup>Department of Food Science and Technology of Tarbiat Modares University, Iran

**Background:** Essential oils (EOS) possess a wide range of significant properties including antiphlogistic, spasmolytic and antinociceptive effects. In this study, we use essential oils (Eos) from *Thymus daenensis*, *Thymus caramanicus* and *Ziziphora clinopodioides*. The context and purpose of the study: this study attempts to determine the growth inhibition level of the essential oils of three plants against *Aspergillus flavus* and *Aspergillus parasiticus* for 14 days.

**Results:** The highest rate of inhibition was observed in *Thymus daenensis* in concentration above 7 µL in 100 mL of PDA medium in which no growth was observed during 14 days.

**The Main Findings:** Among the three essential oils, *T. daenensis* contains the highest level of thymol (77.62%). *Ziziphora clinopodioides* contains pulegone (31.21%), menth-3-en-8-ol (23.82%), menthol (7.21%), borneol (2.25%), carvacrol (5.38%) and piperitone (5.55%). Only a concentration of 9 µL of essential oils of *Z. clinopodioides* can prevent mycelium growth of both fungi for 7 days. *Thymus caramanicus* contains carvacrol (65.52%), p-cymene (13.21%), gamma-terpinene (4.44%), thymol (4.14%) and linalool (2.63%).

**Conclusion:** Although *T. caramanicus* contains 65.52% carvacrol, its inhibition growth ability does not reach 100% in all concentrations and it is capable of inhibiting fungal growth completely (100%) at 7 and 9 µL concentrations for one day. This indicates that compound thymol is more effective than carvacrol in prevent of growth fungi.

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