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Antimicrobial effects of the cinnamon, tarragon and ginger oils

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Aim: The increase in antibiotic-resistant bacteria has dramatically revived the interest in plant products as alternative antimicrobial agents to prevent the efficiency of pathogenic microorganisms. Our aim in this study is to show the antimicrobial activities cinnamon (*Cinnamomum cassia*), tarragon (*Artemisia dracunculus*) and ginger (*Zingiber officinale*) oils against the clinically important bacteria and yeasts.

Materials & Method: The antimicrobial activity of the cinnamon, tarragon and ginger oils were tested against *Citrobacter* spp., *Klebsiella* spp., *Proteus mirabilis, Pseudomonas,* MRKNS, *Enterococcus* spp., *Staphylococcus aureus, Enterobacter aerugenes, Candida* spp., and *E. coli*. Essential oils of cinnamon, tarragon and ginger were extracted by steam distillation, final yield of extraction 0.5, the volume of EO extract was adjusted to 100 ml with sterile distilled water, thus obtaining the crude essential oil extracts used for antimicrobial tests. Disc diffusion method (Kirby-Bauer) was used to show the antimicrobial activity by measuring the zone diameters. Turbidity was visually adjusted to that of a 0.5 McFarland turbidity standard (1.5×10 CFU/ml) using sterile Mueiler-Hinton broth and after 24 hours.0.1 ml for each oils, Sterile filter paper disks were prepared to a diameter of 6.35 mm and sterilized in a Pasteur-oven, (at 170~ for 2 hour). Volatile oils and extracts were sterilized by passing through 0.22 mm pore-size membrane filters and then 0.02 ml of the solution of volatile oils was pipette into the center of each disk to achieve the desired potency. Disks were air-dried in a contamination free environment.

Results: The cinnamon oil shows an antimicrobial activity against the tested microorganisms with different zone. *Citrobacter* 25 mm, *Klebsiella* 18 mm, *P. mirabilis* 23 mm, *Pseudomonas* 15 mm, MRKNS 22 mm, *Enterococcus* 70 mm, *S. aureus* 32 mm, *Enterobacter* 19 mm, *Candida* spp. 18 mm and *E. coli* 10 mm. Ginger and tarragon oil does not show antimicrobial activity against bacteria.

Conclusion: The cinnamon oil has a stronger antimicrobial activity than the tarragon and ginger oils. Herbal essential oils are candidates to be alternatives in medical applications due to their anti-microbial effects.

Biography

Demet Celebi has completed her MSc from Atatürk University Medical Faculty Microbiology, PhD in Atatürk University Medical Faculty Microbiology. She is currently working in Ataturk University Veterinary Faculty.

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