

4th World Summit on

FOOD AND NUTRITION

April 06-07, 2023 | Madrid, Spain

In vitro and in situ antimicrobial activity of *Vetiveria zizanioides* essential oil

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Vetiveria zizanioides (L.) is a plant growing in Southern Asia, Burmese, Ceylon Island, Bangladesh and tropical Africa and used in these countries as an alternative medicine. *V. zizanioides* called as 'vetiver' belongs to the Poaceae family. It has many biological activities as antimicrobial, antifungal, antiviral, anticarcinogenic, etc. activities. The aim of the research was to evaluate in vitro and in situ antimicrobial of the *Vetiveria zizanioides* essential oil (VZEO) produced in Slovakia. The antimicrobial activity by disc diffusion method, microdilution method, and vapour phase for three Gram-positive, Gram-negative bacteria and three *Penicillium* spp. were used. Antimicrobial properties were assessed using the agar microdilution protocol. The vapour phase of *Penicillium citrinum*, *Penicillium*

crustosum, *Penicillium expansum*, *Micrococcus luteus*, *Listeria monocytogenes*, *Staphylococcus aureus*, *Escherichia coli*, *Enterobacter aerogenes* and *Pseudomonas aeruginosa* on bread, carrot, potato, sweet potato, and apple in situ was studied. The results of disc diffusion and broth diffusion methods showed that VZEO was strongly effective against all tested microorganisms and the vapor phase method was effective and active against all *Penicillium* spp., but not strongly effective against bacteria in food preservation of food matrices. Thus, the various properties of essential oils offer the possibility of using natural, safe, eco-friendly, cost-effective, renewable, and easily biodegradable antimicrobials for food commodity preservation in the near future.

Biography

Miroslava Kačániová, PhD. has working as a university teacher at the Institute of Horticulture, Faculty of Horticulture and Landscape Engineering, Slovak Agriculture University in Nitra (SUA) since 2019. She worked at Faculty of Biotechnology and Food Sciences, SUA from October 1998 until September 2019. She has also working as full professor at University of Rzeszow, Institute of Food Technology and Nutrition, Department of Bioenergetics, Food Analysis and Microbiology since March 2017 and her work activity here is focused on similar topics and issues as in Slovakia.

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