UN FOOD CONFERENCE
University of Belgrade
210th Anniversary
OCTOBER 5-6 2018

PROGRAM

I

ZBORNIK RADOVA

Programme

&

Book of Abstarcts

Beograd, 5 i 6 oktobar 2018
Belgrade, Octobre 5-6, 2018

CIP-Kategorizacija u publikaciji
Narodna biblioteka Srbije, Beograd

Univerzitet u Beogradu
UNIFOOD CONFERENCE (2018; Beograd)
Program; i zbornik radova= Programme; & Book of Abstracts/
Beograd, 5 i 6 oktobar 2018 = Belgrade, Octobre 5-6 2018
[organizator] Univerzitet u Beogradu; [organized by] University of Belgrade
[urednici, editors Marina Soković, Živoslav Tešić] Beograd, Univerzitet u Beogradu

Radovi na srp i engl. jeziku – Tekst ćir i lat- Tiraž

ISBN 978-86-7522-060-2

UNIFOOD Konferencija, Beograd, 5-6 oktobar 2018
PROGRAM I ZBORNIK RADOVA

UNIFOOD Conference, Belgrade Octobre 5-6 2018
Programme and Book of Abstracts

Izdaje / *Published by*
Univerzitet u Beogradu / *University of Belgrade*
Studentski trg 1, 11000 Beograd
Tel/fax ; www.bg.ac.rs, email

Za izdavača / *For Publisher*
Vladimir Bumbaširević, rektor

Urednici / *Editors*
Marina Soković
Živoslav Tešić

Dizajn korica i kompjuterska obrada teksta / Cover Design Layout
Tomislav Tosti

Tiraž / *Circulation*
ISBN 978-86-7522-060-2

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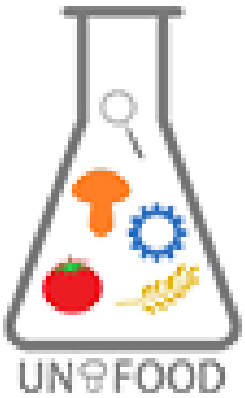

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The conference organizers gratefully acknowledge the generous support provided by the following:

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ANTIBAKTERIJSKI EFEKAT VINSKIH MARINADA SA ETARSKIM ULJIMA *Juniperus communis* I *Satureja montana* NA KONTAMINENTE JUNEĆEG MESA

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Proces mariniranja se obično koristi za unapređenje senzornih svojstava mesa, ali doprinosi i kontroli mikrobiološke kontaminacije. Vina se često koriste za marinaciju, a etarska ulja (EO) se u marinade mogu dodavati i kao arome i kao prirodni konzervansi. Cilj ovog rada je ispitivanje antibakterijskog efekta različitih marinada od crnog vina na junećem mesu. Testirane su osnovna vinska marinada (BM), marinada sa dodatkom EO *Juniperus communis* (BM+J), EO *Satureja montana* (BM+S) i kombinacije oba ulja (BM+JS). Ispitan je antibakterijski efekat prema patogenu hrane *Listeria monocytogenes* inokulisanom na meso, kao i prema prisutnim mikrobiološkim kontaminentima iz grupa aerobnih heterotrofnih mezofilnih bakterija (AHMB), Enterobacteriaceae i bakterija mlečne kiseline (LAB).
Rezultati testa vremenski zavisne inhibicije rasta ukazuju da su vrednosti log CFU/g za sve praćene grupe smanjene primenom svake od marinada, a u odnosu na negativnu kontrolu (0,85% kuhinjska so). Izrazit je efekat BM marinade, koja je redukovala brojnost bakterija za oko 2-3 log CFU/g. Dodatak bilo kog pojedinačnog ulja ili njihove kombinacije dodatno je smanjilo brojnost za oko 1-2,5 log CFU/g u odnosu na BM. Interesantno je da je jasno pojačavanje antibakterijskog efekta u slučaju BM+JS, a u poređenju sa BM+J i BM+S, uočeno samo u slučaju AHMB. Rezultat senzorne analize ukazuje na prihvatljivost ukusa i mirisa marinada sa svim testiranim koncentracijama ulja *J. communis*. Sa druge strane, dodatak ulja *S. montana*, kao i kombinacije oba ulja, bili su senzorno prihvatljivi samo kada su test supstance bile primenjene u nižim koncentracijama.
Ovaj rad je potvrdio antibakterijski efekat marinada od crnog vina i ukazao na mogućnost korišćenja etarskih ulja *J. communis* i *S. montana* u cilju povećanja održivosti junećeg mesa. Činjenica da ona mogu inhibirati rast *L. monocytogenes* i bakterija kvarenja hrane stimuliše dalja istraživanja.

ANTIBACTERIAL ACTIVITY OF RED-WINE MARINADES CONTAINING *Juniperus communis* AND *Satureja montana* ESSENTIAL OILS AGAINST FOOD CONTAMINANTS IN BEEF

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Marinating process is commonly used to improve the sensory properties of meat, but it also contributes to control of microbial contamination. Wines are frequently used for marination, while essential oils (EOs) could be added both as flavoring agents and natural preservatives. The aim of this work was to monitor the antibacterial effect on beef soaked in red wine-base marinades without EO (BM), or containing *J. communis* EO (BM+J), *S. montana* EO (BM+S) or their combinations (BM+JS). The antibacterial activity was evaluated against food borne pathogen *Listeria monocytogenes* inoculated on meat, and against naturally occuring meat spoilage bacteria: aerobic heterotrophic mesophyll bacteria (AHMB), Enterobacteriaceae and lactic acid bacteria (LAB). In addition, sensory properties of marinated meat was determined.
Results of time kill assay revealed that comparing to saline (0.85% table salt), the counts of log CFU/g for all monitored groups dropped in all marinades. The remarkable effect was achieved with the BM which reduced the counts of all tested groups comparing to saline, for approximately 2-3 log CFU/g. The addition of any single oil or their combination enhanced the antibacterial effect of marinade (additional drop of log CFU/g for 1-2.5 units, comparing to BM). Interestingly, the clear enhance of antibacterial effect with oil mixture, comparing to any single oil, was obtained only in the case of AHMB.
Results of sensory analysis indicated that addition of any tested concentration of *J. communis* EO in marinade was acceptable in terms of taste and odor, while addition of *S. montana* EO, or oil combination, was acceptable only at lower tested concentrations.
This work confirmed the antibacterial effect of red wine marinades and elucidated the potential use of *S. montana* and *J. communis* essential oils in beef preservation. Since they could provide a safety barrier against *L. monocytogenes* and food spoilage bacteria, further research is encouraged.