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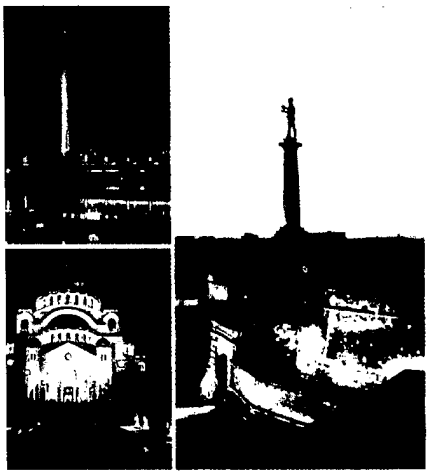
Savez farmaceutskih udruženja Srbije
Pharmaceutical Association of Serbia

Univerzitet u Beogradu-Farmaceutski fakultet
University of Belgrade-Faculty of Pharmacy



VI

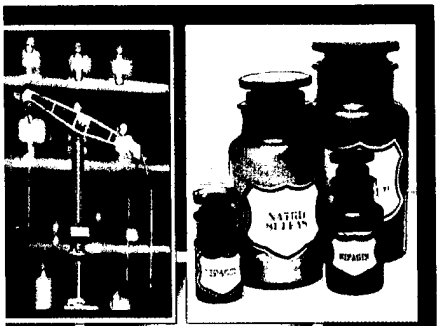
KONGRES FARMACEUTA SRBIJE
sa međunarodnim učešćem

SERBIAN CONGRESS OF PHARMACY
with international participations

FARMACIJA U SLUŽBI ZDRAVLJA
NAUKA I PRAKSA

THE ROLE OF PHARMACY IN HEALTH SERVICE
SCIENCE AND PRACTICE

ZBORNIK SAŽETAKA
ABSTRACT BOOK



15-19. oktobar 2014.
Beograd, hotel Crowne plaza

October 15th-19th 2014.
Belgrade, Hotel Crowne plaza

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Sadržaj/C

Dobijeni rezultati pokazuju da su voćna vina izvor antioksidanasa. Antioksidativna svojstva voćnih vina zavise od vrste voća od koga su proizvedena. Pošto su voćna vina bogata različitim antioksidansima ona pokazuju pozitivan efekat na zdravlje uopšte.

Fruit Wines from Serbian Market and Their Antioxidant Properties

U. Čakar[1], A. Petrović[2], M. Živković[3], V. Vajs[3] B. Đorđević[1]
[1]Faculty of Pharmacy, University of Belgrade; [2]Faculty of Agriculture, University of Belgrade; [3]Institute for Chemistry, Technology and Metallurgy, Belgrade Serbia

Fruit and their products are rich sources of significant amount of compounds which show benefit health effect on human organism. Fruit wines possess antioxidant properties since they are rich source of polyphenol compound which are important and involved in health protection from oxidative stress.

The aim of this study was to investigate the profile and *in vitro* antioxidant properties of fruit wines.

Determination of total polyphenol content was conducted by Folin–Ciocalteu method. Antioxidant capacity of samples was determined by DPPH method, by calculating the extent of inhibition of DPPH radicals. Discoloration was measured on spectrophotometer at 518 nm. We also used modern FRAP procedure for direct determination of antioxidant properties of samples.

All the determinations were conducted in 3 samples of wine from Serbian producer from local market. The wines were made from raspberry, blackberry, and blueberry. For identification and quantification of some antioxidant compounds HPLC method was used. Fruit wines are rich source of compounds with antioxidant properties such as catechin, epicatechin and ellagic acid. Beside these were also identified other components that have important health effects. Total polyphenol content was determined by Folin-Ciocalteau method and was in range 580,13-849,23 mg/L expressed through concentration of gallic acid. The results of DPPH analyze in our samples were in range of 35,69-44,47%. The results of samples analyzed by modern FRAP procedure were in range of 10,213-12,889 mmol/Fe^{2+}.

The obtained results indicate that fruit wines are sources of antioxidant compounds. Antioxidant properties of fruit wines depend from which fruit they were made. Since fruit wines are rich in different antioxidants they could show benefits upon overall health.

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Lactobacillus casei Loaded Alginate-Soy Protein Microparticles: Acidification Kinetics and Survival of the Probiotic in Simulated Gastrointestinal Conditions

J. Hadzieva[1], A. Stefanovska[2], L. Petrushevska-Tozi[1], V. Rafajlovska[2], T.P. Ivanovska[1], M.G. Dodov[1], M.S. Crcarevska[1], M.J. Pavlova[3], K. Smilkov[4], K. Mladenovska[1]
[1]Faculty of Pharmacy, [2]Faculty of Technology and Metallurgy and [3]Faculty of Medicine, University "Ss Cyril and Methodius" in Skopje, Republic of Macedonia, [4]Faculty of Medicine, University "Goce Delchev" in Shtip, Republic of Macedonia

Lactobacillus casei has already proven its health effects. However, its viability decreases after exposure to gastric juice and bile salts. The aim of this study was to protect the probiotic microorganism from the harsh environment of the GIT by microencapsulation in

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tively charged micropartic
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the survival compared to a

Bioadhesive Properti
Chitosan-Ca-alginate

T. Petreska-Ivanovska[1], Z. Zhi
M. Jurhar-Pavlova[2], K. Mlade
[1]University "Ss. Cyril and Methodius", Faculty of Medicine, Sk

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Antioksidativna svojsu voćna vina bogata uopšte.

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uroclion@gmail.com

icles: Acidification ntestinal Conditions

ovska[1], M.G. Dodov[1],

versity "Ss Cyril and Methodius" Republic of Macedonia

r, its viability decreases was to protect the promicroencapsulation in

alginate-soy protein microparticles. Aqueous dispersion of alginate (2.5% w/w) and probiotic cells (ca.12$\log_{10}$CFU/g) was emulsified in olive oil containing 0.2% Tween 80 to obtain microparticles which were subsequently cross-linked ($CaCl_2$, 3%w/w), coated with the protein (1:4-4:1 in respect to alginate), isolated, washed and stored (0.9% saline, 4°C). Negatively charged microparticles were obtained (d_{50}16-36μm, Ca-content 5.56-9.38%, viability 9.11-11.25$\log_{10}$CFU/g). Free and encapsulated cells were cultivated in MRS broth (37°C) to determine if they were still metabolically active. pH values and optical density at 600 nm were measured every 4h. Viability tests of free and encapsulated cells were performed by exchanging simulated GI juices (gastric-3h, pH1.5, 0.3%w/v pepsin, intestinal-3h, pH6.8, 0.6%w/v Ox-gall, 0.1%w/v pancreatin, colon-6h, pH7.4) after incubation (37°C, 75rpm). The enumeration of living cells was assayed by incubation on MRS agar (37°C, 48h). The time taken to decrease the initial pH of MRS broth to 4 was 20h for free cells and for encapsulated cells 32-56h. Initial decrease in cell survival was observed after 0.5h (70% for free, 20-35% for encapsulated cells). After 12h, the viability of the encapsulated cells was 5.7-8.6$\log_{10}$CFU/g. In conclusion, encapsulated *L. casei* in alginate-soy protein microparticles showed significantly higher survival in simulated GIT compared to free cells. The use of protein increased the survival compared to alginate alone.

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Bioadhesive Properties of Synbiotic Loaded Chitosan-Ca-alginate Microparticles

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[1]University "Ss. Cyril and Methodius", Faculty of Pharmacy, Skopje, Republic of Macedonia; [2]University "Ss Cyril and Methodius", Faculty of Medicine, Skopje, Macedonia

Biodegradable synbiotic chitosan-Ca-alginate microparticles were prepared using spray-drying method and subsequent freeze-drying in order to take advantage of the protective and mucoadhesive effects of polymers for improved intestinal delivery of the probiotic *Lactobacillus casei.*

The objective of the study was to investigate the adherence capacity of the free probiotic cells which are negatively charged and encapsulated *L. casei* by *in vitro* adsorption studies using pig mucine (PM). After incubation of equal volumes of the samples and PM suspensions in different buffer solutions (pH 2.0, 4.5, 6.8 and 7.4; Ph.Eur.4) at 37°C, bioadhesive interactions of the free cells, synbiotic and empty microparticles were measured UV spectrophotometrically at 251 nm in the supernatants since interacted PM was sediment with the cells or particles.

Low adsorption of PM on free cells surface (11.36% to 17.03%) and excessive adsorption of PM on the surface of the microparticles (51.87% to 68.81%) were observed in all buffers in the tested period of 24 h, indicating that interactions with mucine are not pH dependent. The results showed significantly improved mucoadhesion of the encapsulated cells compared to the free ones, while no significant differences were found between empty and synbiotic microparticles. These findings are in accordance with the positive surface charge of the chitosan-Ca-alginate microparticles (zeta potential, +21.6±1.1 *mV*).

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