



THE INTERNATIONAL SYMPOSIUM ON ANIMAL SCIENCE

ISAS 2019

Book of Abstracts



June, 03rd – 08th, 2019. Herceg Novi, Montenegro



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21000 Novi Sad, Trg D. Obradovića 8
Tel.: ++(021) 6350-711; 4853-308;
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THE INTERNATIONAL SYMPOSIUM ON ANIMAL SCIENCE (ISAS) 2019

03-08.06.2019. Herceg Novi, Montenegro

BOOK OF ABSTRACTS

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Co-Sponsorship

European Society of Agricultural Engineers



ISBN: 978-86-7520-467-1

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Publisher

University of Novi Sad, Faculty of Agriculture
21000 Novi Sad, Trg D. Obradovića 8
Tel.:++(021) 6350-711; 4853-308;
polj.uns.ac.rs

On behalf of Publisher

Prof. dr Nedeljko Tica

Editor in Chief

Prof. dr Lidija Perić

Paper review

All papers reviewed by The International Board of Reviewers

Recorded by

Feljton, Stražilovska 17, Novi Sad

Cover

Elsa Chang,
www.elsasketch.com

Copies

240

CIP - Каталогизacija y publikaciji
Biblioteka Maticе српске, Нови Сад

636(048.3)

INTERNATIONAL Symposium on Animal Science (2019 ; Herceg Novi)

Book of abstracts [Elektronski izvor] / The International Symposium on Animal Science (ISAS) 2019, 3-8. 6. 2019, Herceg Novi, Montenegro ; [editor in chief Lidija Perić]. - Novi Sad : Faculty of Agriculture, 2019. - 1 elektronski optički disk (CD-ROM) : tekst ; 12 cm

Nasl. sa naslovnog ekrana. - Napomene i bibliografske reference uz tekst.

ISBN 978-86-7520-467-1

a) Сточарство -- Апстрактн

COBISS.SR-ID 329515527

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COLORED SOYBEAN SEEDS: A NEW SOURCE OF FUNCTIONAL FEED IN ANIMAL NUTRITION

Malenčić Đ.¹, Miladinović J.², Kiprovska B.², Mikulić M.³, Hogervorst J.³, Prvulović D.¹

Abstract: Food and feed of plant origin containing phytochemicals of great antioxidant potential are called nowadays “functional”, which means that they beside nutritive traits, feature also some medicinal properties. Plant phenolics show useful characteristics in human and animal metabolism, such as antiinflammatory and even anticarcinogenic. They possess antibacterial, antimutagenic and vasodilatory activities, as well. Acting as natural antioxidants they lower the risk of atherosclerosis and cardiac illness. Thus, soybean based feed enriched with polyphenols may be classified as functional feed in animal diet.

Content of total polyphenols, tannins, flavonoids and anthocyanins were evaluated in the seeds of seven soybean varieties of different seed color. One yellow seed cultivar represented a reference genotype. Isoflavone (phytoestrogen) content and composition was determined using HPLC analysis on an Agilent model 1100, equipped with diode array detector (DAD). Aglycons were quantified from three five-point regression curves ($R \geq 0.9998$) obtained using the corresponding standards (daidzein, glycitein and genistein). In addition, antioxidant activity of seed extracts was evaluated by the 2,2-diphenyl-1-picrylhydrazyl (DPPH) free radical scavenging activity assay.

A positive linear correlation between antioxidant activity and contents of total polyphenols and anthocyanins was established. The highest antioxidant activity was observed in the extracts of black and brown varieties, which also showed high levels of all polyphenol classes examined. Yellow seed had the highest total isoflavone content (3.62 mg/g of dry material). The highest concentration of total daidzein was determined in black seeds (>2.0 mg/g d.m.), and the highest total glycitein and genistein contents occurred in the yellow cultivar (0.53 and 1.49 mg/g d.m., respectively). Varieties of black and brown seeds could be of special interest due to large content of polyphenols (4.94-6.22 mg/g d.m.), especially from the class of anthocyanins. Obtained data should enable the selection of genotypes rich in natural antioxidants that could further be processed into functional feed in animal diet.

Keywords: colored soybean seeds, functional food, polyphenols, antioxidant activity

¹ Malenčić Đorđe, PhD, full professor; Prvulović Dejan, PhD, assoc. professor; University of Novi Sad, Faculty of Agriculture, Novi Sad, Serbia;

² Miladinović Jigor, PhD, principal research fellow; Kiprovska Biljana, PhD, research associate; Institute for Field and Vegetable Crops, Novi Sad, Serbia;

³ Mikulić Mira, PhD, assist. professor; Hogervorst Jelena, PhD, full professor; University of Novi Sad, Faculty of Medicine, Novi Sad, Serbia.

Corresponding author: Malenčić Đorđe, email: malencic@polj.uns.ac.rs