SADRŽAJ RIBOFLAVINA U EKSTRAKTIMA TRI *VERBASCUM* VRSTE

Maja Grigorov[1*], Slavica Sunarić[2], Dragana Pavlović[1]

[1] Katedra Farmacija, Medicinski fakultet Univerziteta u Nišu, Niš, Srbija
[2] Katedra Hemija, Medicinski fakultet Univerziteta u Nišu, Niš, Srbija

*maja.grigorov@gmail.com

Vitamini B kompleksa ispoljavaju brojne biološke aktivnosti na ljudskom telu, koži, kosi i noktima. Zbog toga bi njihov sadržaj u različitim biljnim ekstraktima mogao biti značajan za procenu zdravstvenih efekata ovih proizvoda (1). Vrste iz roda *Verbascum* su dobro poznate po svojim antiinflamatornim, antimikrobnim, antiseptičkim, sedativnim, diuretičkim, imunomodulatornim i antivirusnim aktivnostima (2). Cilj našeg rada bio je određivanje riboflavina u različitim ekstraktima tri vrste *Verbascum*. Cvetovi *Verbascum niveum* (VN), *Verbascum speciosum* (VS) i *Verbascum phlomoides* (VP) sakupljeni su u okolini Bosilegrada, a ekstrakti su pripremljeni perkolacijom sa dva različita rastvarača (etanol 50% i destilovana voda). Za detekciju i kvantifikaciju korišćena je HPLC metoda sa fluorescentnom detekcijom uz primenu eksternog standarda. Rezultati su prikazani u mg/g suvog ekstrakta. Prema našim rezultatima, riboflavin je detektovan u svim ispitivanim ekstraktima. Najveća količina nađena je u vodenom ekstraktu VS (1.25 mg/g), a najmanji sadržaj određen je u etanolnom ekstraktu VS (0.49 mg/g). Dok je kod biljne vrste VS vodeni ekstrakt bio bogatiji od etanolnog, kod biljnih vrsta VN i VP veći sadržaj je određen u etanolnim (0.90 mg/g i 0.84 mg/g) u odnosu na vodene ekstrakte (0.56 mg/g i 0.53 mg/g). Na osnovu naših rezultata, možemo zaključiti da su ove vrste bogate riboflavinom i da njegova količina varira u zavisnosti od biljne vrste i korišćenog ekstragensa.

Literatura

1. Sunarić S, Pavlović D, Stanković M, Živković J, Arsić I. Ribofavin and thiamine content in extracts of wild-grown plants for medicinal and cosmetic use. Chemical Papers 2020; 74: 1729-1738.
2. Dimitrova P, Georgiev M. I, Khan M. T. H, Ivanovska N. Evaluation of Verbascum species and harpagoside in models of acute and chronic inflammation. Cent. Eur. J. Biol. 2013; 8(2): 186-194.

Zahvalnica

Ovo istraživanje je podržano od strane Ministarstva nauke, tehnološkog razvoja i inovacija i Internog projekta (br. 15) Medicinskog fakulteta Univerziteta u Nišu.

RIBOFLAVIN CONTENT IN EXTRACTS OF THREE *VERBASCUM* SPECIES

Maja Grigorov[1], Slavica Sunarić[2], Dragana Pavlović[1]

[1] Department of Pharmacy, Faculty of Medicine, University of Niš, Niš, Serbia
[2] Department of Chemistry, Faculty of Medicine, University of Niš, Niš, Serbia

*maja.grigorov@gmail.com

B complex vitamins possess numerous biological activities on the human body, skin, hair and nails. That is why their content in different plant extracts could be important for the assessment of the health effects of these products (1). Species from the genus *Verbascum* are well known for their anti-inflammatory, antimicrobial, antiseptic, sedative, diuretic, immunomodulatory and antiviral activities (2). The aim of our work was to determine riboflavin in different extracts of three *Verbascum* species. The flowers of *Verbascum niveum* (VN), *Verbascum speciosum* (VS) and *Verbascum phlomoides* (VP) were collected in the vicinity of Bosilegrad, and the extracts were prepared by percolation with two different solvents (ethanol 50% and distilled water). HPLC method with fluorescence detection was employed for detection and quantification with the application of an external standard. The results are presented in mg/g of dry extract. According to our results, riboflavin was detected in all tested extracts. The highest amount was found in the water extract of VS (1.25 mg/g), and the lowest content was determined in the ethanol extract of VS (0.49 mg/g). While the aqueous extract was richer than ethanol in plant species VS, in plant species VN and VP a higher content was determined in ethanol (0.90 mg/g and 0.84 mg/g) compared to water extracts (0.56 mg/g and 0.53 mg/g). Based on our results, we can conclude that these species are rich in riboflavin and that its amount varies depending on the plant species and the solvent for extraction used.

References

1. Sunarić S, Pavlović D, Stanković M, Živković J, Arsić I. Ribofavin and thiamine content in extracts of wild-grown plants for medicinal and cosmetic use. Chemical Papers 2020; 74: 1729-1738.
2. Dimitrova P, Georgiev M. I, Khan M. T. H, Ivanovska N. Evaluation of Verbascum species and harpagoside in models of acute and chronic inflammation. Cent. Eur. J. Biol. 2013; 8(2): 186-194.

Acknowledgements

This work is supported by the Ministry of Science, Technological Development and Innovation of the Republic of Serbia and an internal scientific project (No. 15) of the Faculty of Medicine, University of Niš.