

**MINERAL COMPOSITION OF THE RED CURRANT (*RIBES RUBRUM L.*) VARIETY REDPOLL LYOPHILIZED WASTE EXTRACT****Maja Cvetković<sup>1\*</sup>, Dušan Ilić<sup>1</sup>, Sanja Petrović<sup>2</sup>, Bojana Miladinović<sup>1</sup>**<sup>1</sup>University of Niš – Faculty of Medicine, Department of Pharmacy, Niš, Serbia<sup>2</sup>University of Niš – Faculty of Technology, Leskovac, Serbia

\*maja.celebrity@gmail.com

Red currants are berries appreciated for their characteristic aroma, trendy shape and numerous health benefits. They are abundant in sugars and phytonutrients. Red currants are also an excellent source of minerals. According to the literature, red currants are especially rich in potassium, calcium and magnesium (1). The aim of this study was to determine the contents of mineral elements in lyophilized waste extract obtained from red currant variety Redpoll (*Ribes rubrum L.*), in order to evaluate its possible applications. The analysis included the determination of 22 chemical elements. Sample preparation was performed by wet digestion, after which the concentration of elements was determined by inductively coupled plasma - optical emission spectrometry (ICP-OES). The mineral composition is shown by decreasing concentrations: K<P<<S<Mg<Ca<Na<Ba<Zn<Sr<Cu<Fe<Si<Mn<Ni<Li. Minerals as Ag, As, Cd, Co, Cr, Pb, and Ti were not detected in the sample. Minerals that are in the highest concentration (K (25,37 mg/g), P (9,482 mg/g), Mg (0.724 mg/g) , Ca (0.637 mg/g)) have many benefits. High intake of K, Mg and Ca is associated with a reduced risk of stroke, hypertension and osteoporosis. Iron is an essential part of many compounds in the oxygen transport and function as cofactors for enzymes (2). The toxic metals weren't isolated, so do not pose any health risk. The data obtained in this study show that Redpoll waste represents valuable source of minerals that can be used in human nutrition and food industry.

**References**

1. Nour, V., Trandafir, I., Ionica, M.E. Ascorbic acid, anthocyanins, organic acids and mineral content of some black and red currant cultivars. *Fruits*. 2011;66: 353-362
2. Larsson S.C. et al. Magnesium, calcium, potassium and sodium intakes and risk of stroke in male smokers. *Arch. Int. Med.* 2008;168:459–465.

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## MINERALNI SASTAV LIOFILIZATA "WASTE" EKSTRAKTA CRVENE RIBIZLE (*RIBES RUBRUM L.*) SORTE REDPOLL

**Maja Cvetković<sup>1\*</sup>, Dušan Ilić<sup>1</sup>, Sanja Petrović<sup>2</sup>, Bojana Miladinović<sup>1</sup>**

<sup>1</sup>Univerzitet u Nišu – Medicinski fakultet, Katedra Farmacija, Niš, Srbija

<sup>2</sup>Univerzitet u Nišu – Tehnološki fakultet, Leskovac, Srbija

\*maja.celebrity@gmail.com

Crvena ribizla spada u bobičasto voće koje je cenjeno zbog svoje karakteristične arome, oblika i nutritivne vrednosti. Ovi plodovi su bogati šećerima i fitonutrijentima. Takodje, odličan je izvor minerala. Prema literaturi, crvena ribizla je posebno bogata kalijumom, kalcijumom i magnezijumom (1). Cilj ovog istraživanja bio je da se utvrdi sadržaj mineralnih elemenata u liofilizatu ekstrakta ostatka ploda nakon ceđenja soka (eng. waste) koji se dobijen iz sorte Redpoll, kako bi se procenila njegova moguća primena. Analiza je obuhvatila 22 hemijska elementa. Priprema uzoraka za analizu vršena je vlažnom digestijom, nakon čega je koncentracija elemenata određivana metodom indukcije spregnutom plazma-optičko emisionom spektrometrijom (ICP-OES). Mineralni sastav je prikazan opadajućim koncentracijama: K<P<<S<Mg<Ca<Na<Ba<Zn<Sr<Cu<Fe<Si<Mn<Ni<Li. Minerali kao sto su Ag, As, Cd, Co, Cr, P i Ti nisu detektovani u uzorku. Minerali koji su prisutni u najvećoj koncentraciji (K (25,37 mg/g), P (9,482 mg/g), Mg (0.724 mg/g) , Ca (0.637 mg/g)) imaju brojne prednosti. Visok unos K, Mg, Ca povezan je sa smanjenim rizikom od moždanog udara, hipertenzije i osteoporoze. Gvožđe igra bitnu ulogu u transportu kiseonika i učestvuje kao kofaktor u aktivaciji mnogih enzima (2). Teški metali nisu detektovani, tako da ne predstavljaju opasnost po zdravlje. Podaci dobijeni u ovoj studiji pokazuju da liofilizovani ekstrakt ostatka ploda dobijen nakon ceđenja soka sorte Redpoll predstavlja vredan izvor minerala koji se mogu koristiti u ishrani ljudi i prehrambenoj industriji.

### **Literartura**

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