

**TOTAL PHENOLIC AND FLAVONOID CONTENT AND ANTIOXIDANT ACTIVITY OF AQUEOUS AND METHANOL EXTRACTS OF *VISCUM ALBUM* L. AERIAL PARTS**

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Mistletoe, *Viscum album* L. has been used in traditional medicine for different treatments (1). The aim was to determine the total phenolic and flavonoid content in aqueous and methanol extracts of the dry aerial parts of this plant collected during flowering stage and to examine their antioxidant activity. Extraction of plant material was performed by refluxing using distilled water and methanol as solvents, and plant to solvent ratio was 1:10. Before extraction, plant material was grounded and sieved. After procedure, extracts were filtered and solvents were evaporated under vacuum. Obtained dry extracts were used for further investigations. DPPH (1,1-diphenyl-2-picrylhydrazyl) test was used to determine the antioxidant activity. Total phenols and flavonoids were determined spectrophotometrically using Folin-Ciocalteu reagent for phenols and AlCl<sub>3</sub> reagent for flavonoids. Antioxidant activity was expressed as IC<sub>50</sub> values, which represent the concentration of the tested sample that inhibited 50% of the DPPH radicals. The IC<sub>50</sub> value of aqueous extract was 1334.42±1.22 µg/ml, while for the methanol extract was 1132.48±1.34 µg/ml. For ascorbic acid, the IC<sub>50</sub> value was 33.54±2.12 µg/ml. The total phenolic content of aqueous extract was 164.65±6.42 mg GAE/g, and the total flavonoid content was 75.53±2.21 mg QE (quercetin equivalent)/g. The total phenolic content of the methanol extract was 179.27±16.04 mg GAE/g, and total flavonoid content was 79.71±3.42 mg QE/g. The methanol extract of the aerial parts of the *V. album* plant had a higher content of total phenols and flavonoids than the aqueous extract. Also, methanol extract showed better antioxidant activity than aqueous extract.

**References**

1. Nazaruk J, Orlikowski P. Phytochemical profile and therapeutic potential of *Viscum album* L. Nat Prod Res. 2016;30(4):373-85.

## FITOHEMIJSKA ANALIZA I ANTIOKSIDACIONA AKTIVNOST VODENOG I METANOLNOG EKSTRAKTA NADZEMNIH DELOVA BILJKE *VISCUM ALBUM L.*

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Bela imela, *Viscum album L.*, se koristi u tradicionalnoj medicini u terapiji različitih oboljenja (1). Cilj ovog rada je da se utvrdi ukupan sadržaj fenola i flavonoida u vodenom i metanolnom ekstraktu suvih nadzemnih delova biljke *V. album* prikupljenih tokom cvetanja i da se ispita njihova antioksidaciona aktivnost. Ekstrakcija biljnog materijala je izvršena postupkom refluktovanja korišćenjem destilovane vode i metanola kao rastvarača, pri čemu je odnos droge i rastvarača bio 1:10. Pre ekstrakcije biljni materijal je usitnjen i prosejan. Nakon ekstrakcije, ekstrakti su profiltrirani, a rastvarač je uparen pod vakuumom. Dobijeni suvi ekstrakti su korišćeni u daljem istraživanju. Za određivanje antioksidacione aktivnosti ekstrakata korišćen je test neutralisanja DPPH (1,1-diphenyl-2-picrylhydrazyl) radikala. Ukupni fenoli i flavonoidi su određivani spektrofotometrijski korišćenjem Folin-Ciocalteu reagensa za fenole i AlCl<sub>3</sub> za flavonoide. Antioksidativna aktivnost je izračunata kao procenat aktivnosti neutralisanja DPPH radikala i izražena kao IC<sub>50</sub> vrednost. IC<sub>50</sub> vrednost vodenog ekstrakta *V. album* je 1334,42±1,22 µg/ml, a metanolnog ekstrakta *V. album* 1132,48±1,34 µg/ml. Za askorbinsku kiselinu IC<sub>50</sub> vrednost je 33,54±2,12 µg/ml. Sadržaj ukupnih fenola vodenog ekstrakta *V. album* je bio 164,65±6,42 mg GAE/g, a sadržaj ukupnih flavonoida 75,53±2,21 mg QE (quercetin equivalent)/g. Sadržaj ukupnih fenola metanolnog ekstrakta je 179,27±16,04 mg GAE/g, a ukupnih flavonoida 79,71 ± 3,42 mg QE/g. Metanolni ekstrakt nadzemnih delova biljke *V. album* ima veći sadržaj ukupnih fenola i flavonoida od vodenog ekstrakta. Takođe, metanolni ekstrakt pokazuje bolju antioksidacionu aktivnost od vodenog ekstrakta.

### Literatura

1. Nazaruk J, Orlikowski P. Phytochemical profile and therapeutic potential of *Viscum album L.* Natural Prod Res. 2016;30(4):373-85.