

CHEMICAL COMPOSITION AND ANTIOXIDANT ACTIVITY OF *SORBUS TORMINALIS* BARK METHANOL EXTRACT**Aleksandra Leković¹, Stevan Samardžić², Jelena Radović Selgrad^{2*},
Tatjana Kundaković-Vasović²**¹Ergomed Ltd., Belgrade, Serbia²University of Belgrade – Faculty of Pharmacy, Department of Pharmacognosy,
Belgrade, Serbia

* jradovic@pharmacy.bg.ac.rs

Sorbus torminalis (L.) Crantz (Rosaceae), also known as wild service tree, is a deciduous tree widespread in central and southern Europe, north-western Africa, western Asia, the Balkan Peninsula and the Caucasus (1, 2). Species of the genus *Sorbus* represent a rich source of polyphenols that are responsible for their numerous proven effects, including anti-diarrhoeal, anti-inflammatory, antidiabetic, antioxidant and anti-atherogenic effect. Accordingly, the bark of *S. torminalis* could have interesting composition and effects, however, data about this herbal drug is insufficient (1). Bark dry methanol extract (DER 9.74:1), obtained after successive extraction with cyclohexane and dichloromethane, was analyzed for antioxidant potential using DPPH and FRAP assay. Contents of total polyphenols, flavonoids and tannins were determined using spectrophotometric methods based on reaction with Folin-Ciocalteu reagent (FC), reaction with aluminum-chloride and adsorption by hide powder in combination with reaction with FC, respectively. LC-DAD-ESI-MS analysis was used for identification of main extract constituents. In DPPH test IC₅₀ value 8.66±0.07 µg/mL was shown, while result of FRAP test was 3.01±0.11 µmol Fe²⁺/mg of dry extract. Contents of total polyphenols, flavonoids and tannins were 0.39±0.06 mg GA/mg of dry extract, 0.035±0.019% and 1.3±0.08%, respectively. By LC-DAD-ESI-MS analysis 25 compounds were detected among which procyanidins (dimers, trimers and tetramers) are dominant. The results of this study showed that dry methanol extract of *S. torminalis* bark is rich in procyanidins which potentially contribute to its antioxidant activity. Additional significant effects of this herbal drug and its isolated compounds should be investigated in future studies.

References

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HEMIJSKI SASTAV I ANTIOKSIDANTNA AKTIVNOST METANOLNOG EKSTRAKTA KORE STABLA *SORBUS TORMINALIS*

Aleksandra Leković¹, Stevan Samardžić², Jelena Radović Selgrad^{2*},
Tatjana Kundaković-Vasović²

¹Ergomed d.o.o, Beograd, Srbija

²Univerzitet u Beogradu – Farmaceutski fakultet, Katedra za farmakognoziju,
Beograd, Srbija

* jradovic@pharmacy.bg.ac.rs

Sorbus torminalis (L.) Crantz (Rosaceae) je listopadno drvo, u narodu poznato pod nazivom brekinja. Rasprostranjeno je širom centralne i južne Evrope, severozapadne Afrike, zapadne Azije, Balkanskog poluostrva i Kavkaza (1, 2). Vrste roda *Sorbus* predstavljaju bogat izvor polifenola koji su odgovorni za njihove brojne dokazane efekte, uključuju antidijaroični, antiinflamatorni, antidijabetski, antioksidantni i antiaterogeni efekat. U skladu sa tim, kora *S. torminalis* mogla bi imati interesantan sastav i efekte, međutim, o ovoj biljnoj drogi nema dovoljno podataka (1). Antioksidantna aktivnost suvog metanolnog ekstrakta kore stabla (DER 9,74:1), dobijenog nakon sukcesivne ekstrakcije cikloheksanom i dihlormetanom, analizirana je DPPH i FRAP testom. Sadržaji ukupnih polifenola, flavonoida i tanina određeni su spektrofotometrijskim metodama koje se zasnivaju na reakciji sa Folin-Ciocalteu reagensom (FC), reakciji sa aluminijum-hloridom i na adsorpciji na kožni prah u kombinaciji sa reakcijom sa FC reagensom, redom. LC-DAD-ESI-MS analiza korišćena je za identifikaciju glavnih sastojaka ekstrakta. U DPPH testu dobijena je IC_{50} vrednost $8,66 \pm 0,07$ $\mu\text{g/mL}$, a rezultat FRAP testa bio je $3,01 \pm 0,11$ $\mu\text{mol Fe}^{2+}/\text{mg}$ suvog ekstrakta. Sadžaj ukupnih polifenola bio je $0,39 \pm 0,06$ mg GA/mg suvog ekstrakta, flavonoida $0,035 \pm 0,019\%$, a tanina $1,3 \pm 0,08\%$. LC-DAD-ESI-MS analizom detektovano je 25 jedinjenja od kojih su dominantni procijanidini (dimeri, trimeri i tetrameri). Rezultati ovog istraživanja pokazali su da je suvi metanolni ekstrakt kore stabla *S. torminalis* bogat procijanidinima koji potencijalno doprinose njegovoj antioksidantnoj aktivnosti. Dodatne značajne efekte ove biljne droge i njenih izolovanih jedinjenja trebalo bi ispitati u budućim istraživanjima.

Literatura

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