

IN VITRO ANTIDIJABETIČKI POTENCIJAL DIVLJE RUŽE**Lazar Žarković¹, Jelena Matejić^{2*}, Ana Džamić¹**

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Dijabetes melitus (DM) je poremećaj metabolizma ugljenih hidrata i povezan je sa niskim nivoom insulina u krvi i insulinskom rezistencijom, što dovodi do konstantnog visokog nivoa glukoze u krvi. Procenjuje se da je 25% svetske populacije pogođeno DM, uključujući razvijene zemalje kao i one u razvoju (1). Zbog sve veće učestalosti DM intezivirana je potraga za novim inhibitorima α -amilaze i α -glukozidaze biljnog porekla koji će biti odgovarajuća zamena sintetičkim. Ova studija je imala za cilj da se utvrdi potencijalna antidijabetička aktivnost ekstrakata samonikle vrste *Rosa micrantha* Borrer (Rosaceae) procenom *in vitro* α -amilazne i α -glukozidazne inhibitorne aktivnosti. Biljni materijal je sakupljen u selu Petnica (Valjevo, Srbija). Etanolni i vodeni ekstrakti listova, hipancijuma i orašica su dobijeni metodom ultrazvučne ekstrakcije. Enzim inhibitorni potencijal ekstrakata je određivan metodom sa skrobom (α -amilazom) i *p*-nitrofenil- α -D-glukopiranozidom (α -glukozidazom) kao supstratom (2). Rezultati su predstavljeni kao IC₅₀ vrednosti (mg/mL) i upoređivani su sa rezultatima dobijenim za akarbozu, kao referentnom supstancom. Etanolni ekstrakt listova je imao najvišu inhibitornu aktivnost (18,69 mg/mL za α -amilazu i 0,74 mg/mL za α -glukozidazu). Etanolni ekstrakt orašica je takođe pokazao značajnu inhibiciju α -amilaze i α -glukozidaze 21,02 mg/mL i 4,02 mg/mL, redom. Nasuprot tome, ispitivani ekstrakti hipancijuma su imali slabiju aktivnost, sa dobijenim vrednostima u opsegu od 26,90 do 72,51 mg/mL (α -amilaza) i 6,41 do 8,39 mg/mL (α -glukozidaza). Etanolni ekstrakt listova je imao sličnu α -glukozidaznu inhibitornu aktivnost kao akarboza (0,42 mg/mL). Dobijeni rezultati su pokazali visok ili umeren nivo *in vitro* antidijabetičke aktivnosti ekstrakata vrste *R. micrantha*. S obzirom da biljni ekstrakti predstavljaju bogat izvor bioaktivnih jedinjenja potrebna su dalja istraživanja antidijabetičkog potencijala ove divlje ruže.

Literatura

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IN VITRO ANTIDIABETIC POTENTIAL OF WILD ROSE

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Diabetes mellitus (DM) is a carbohydrate metabolism disorder linked to low blood insulin levels and insulin resistance, resulting in constant high blood glucose levels. It is estimated that 25% of the world's population is affected by DM, including developed and developing countries (1). Due to the increasing DM incidence, searching for new α -amylase and α -glucosidase inhibitors from plants is an appropriate replacement for synthetic ones. This study aimed to determine antidiabetic potential by evaluating the *in vitro* α -amylase and α -glucosidase inhibitory activity of extracts obtained from wild-growing *Rosa micrantha* Borrer (Rosaceae) species. Plant material was collected from Petnica village (Valjevo, Serbia). Ethanolic and water extracts of the leaves, hypanthium and achenes were prepared using ultrasonic-assisted extraction. Enzyme inhibitory potential was measured using the method with starch (α -amylase) and *p*-nitrophenyl- α -D-glucopyranoside (α -glucosidase) as substrate (2). The results were expressed as IC₅₀ value (mg/mL) and compared with acarbose as a reference substance. Ethanolic leaf extracts had the highest inhibitory activity, 18.69 mg/mL for α -amylase and 0.74 mg/mL for α -glucosidase. In addition, ethanolic extracts obtained from achenes demonstrate significant inhibition on α -amylase and α -glucosidase at 21.02 mg/mL and 4.02 mg/mL, respectively. In contrast, the tested hypanthium extracts showed the lowest inhibitory activity, ranging from 26.90 to 72.51 mg/mL (α -amylase) and 6.41 to 8.39 mg/mL (α -glucosidase). Ethanolic leaf extract had the similar α -glucosidase inhibitory activity as acarbose (0.42 mg/mL). The obtained results showed that *R. micrantha* extracts expressed high or moderate *in vitro* antidiabetic activity. Considering that plant extracts present a rich source of bioactive compounds, further investigation of antidiabetic potential of this wild-growing rose is needed.

References

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