

OPTIMIZACIJA REFLUKS EKSTRAKCIJE UKUPNIH EKSTRAKTIVNIH MATERIJA IZ KRUNIČNIH LISTIĆA CVETA PATULJASTE KADIFE (*Tagetes patula* L.)**Nataša Simonović^{1*}, Marija Stojanović Krasić¹, Zoran Ilić², Ljiljana Stanojević¹, Jelena Zvezdanović¹, Dragan Cvetković¹, Jelena Stanojević¹**¹ Univerzitet u Nišu, Tehnološki fakultet, Leskovac, Srbija² Univerzitet u Prištini, Poljoprivredni fakultet, Lešak, Srbija

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Cvetovi patuljaste kadife (*Tagetes patula* L., Asteraceae) svojim žutim, narandžastim ili žuto-narandžastim nijansama kruničnih listića ukrašavaju bašte širom sveta. Farmakološke aktivnosti patuljaste kadife obuhvataju analgetičko, antiinflamatorno, antioksidativno, antimikrobno, nematocidno i insekticidno dejstvo, dok su fitohemijske studije otkrile prisustvo tiofena, glikozida, karotenoida, flavonoida, antocijana, alkaloida (+)-jafrina i terpena (1). Cilj ovog rada bio je određivanje optimalnih uslova refluks ekstrakcije za ukupnu ekstraktivnu materiju (UEM) etanolnih ekstrakata iz kruničnih listića cveta kadife korišćenjem centralnog kompozitnog dizajna (CCD) sa metodologijom odzivnih površina (RSM). Sadržaj UEM je određen gravimetrijski sušenjem na 105 °C do konstantne mase. Faktori odabrani za optimizaciju ekstrakcije bili su: odnos biljnog materijala i rastvarača (solvomodul 1:10, 1:20 i 1:30 m/V); koncentracija etanola (20%, 58% i 96% V/V); temperatura ekstrakcije (40°C, 55°C i 70°C); i vreme ekstrakcije (20 min, 50 min i 80 min). Urađeno je dvadeset osam eksperimenata. Prema korišćenom regresionom modelu, vreme ekstrakcije nije bilo statistički važan faktor ($p > 0,05$). Predviđeni optimalni uslovi bili su: koncentracija etanola od 33,84%, temperatura ekstrakcije od 70°C i solvomodul od 1:10 m/V, sa predviđenim UEM vrednostima u opsegu od 24,68714-29,17208 mg/ml. Eksperimentalno dobijena UEM vrednost pod optimalnim uslovima bila je 26,92958 mg/ml, što ukazuje na dobru korelaciju sa korišćenim modelom. Određivanje hemijskog sastava dobijenih ekstrakata biće predmet naših daljih istraživanja.

Literatura

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REFLUX EXTRACTION OPTIMIZATION FOR TOTAL EXTRACTIVE MATTER OF DWARF MARIGOLD (*Tagetes patula* L.) FLOWER PETALS

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Dwarf marigold (*Tagetes patula* L., Asteraceae) flowers with their yellow, orange, or a mix of these two shades of petals decorate gardens all over the globe. The pharmacological activities of dwarf marigold include analgesic, anti-inflammatory, antioxidant, anti-microbial, nematocidal, and insecticidal activity, while the phytochemistry studies revealed the presence of thiophenes, glycosides, carotenoids, flavonoids, anthocyanins, one alkaloid ((+) jafrine), and terpenes (1). The present study aimed to determine the optimum reflux extraction conditions for total extractive matter (TEM) of ethanolic extracts from marigold flower petals by using the central composite design (CCD) of response surface methodology (RSM). The TEM was determined gravimetrically by oven drying at 105 °C until a constant weight was reached. Sample to solvent ratio (solvomodule 1:10, 1:20, and 1:30 m/V); ethanol concentration (20%, 58%, and 96% V/V); extraction temperature (40°C, 55°C, and 70°C); and extraction time (20 min, 50 min, and 80 min) were factors applied to determine the optimum conditions. Twenty-eight runs were done. According to the regression model used, the extraction time was not a statistically important factor ($p>0.05$). The optimal conditions predicted were an ethanol concentration of 33.84%, an extraction temperature of 70°C, and a solvomodule of 1:10 m/V, with the TEM values predicted to be in the range of 24.68714-29.17208 mg/ml. The TEM value obtained experimentally under optimal conditions was 26.92958 mg/ml, indicating a good correlation with the model used. The determination of the chemical composition of the extracts obtained will be the subject of our future studies.

References

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