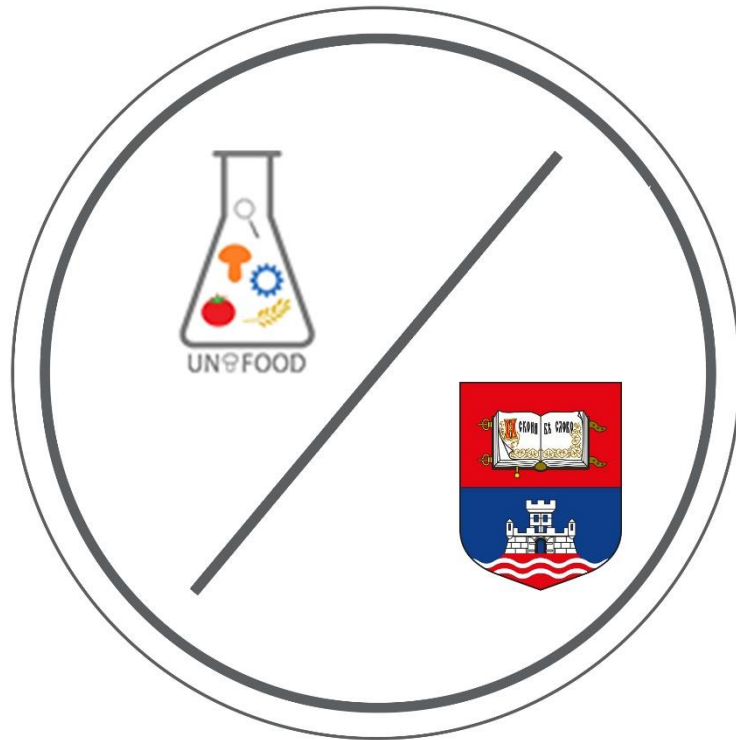


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PHENOLIC PROFILE AND IN VITRO BIOLOGICAL ACTIVITIES OF BLACKTHORN FRUIT (*Prunus spinosa* L.)

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The blackthorn, *Prunus spinosa* L. (Rosaceae) is a continental shrub widespread in Europe. The fruit is used in traditional medicine in the treatment of respiratory disorders, as well as diuretic, spasmolytic and anti-inflammatory agent. The aim of this study was to investigate the phenolic profile and in vitro biological activities: antioxidant, anti-diabetic, anti-tyrosinase, and anti-acetylcholinesterase. Furthermore the effect of blackthorn fruit extract on probiotic microorganisms was also studied. The blackthorn fruits were collected from two localities in Serbia and extracted with water, methanol and ethanol (50% V/V) at room temperature. The total phenolic contents was analysed by the Folin-Ciocalteu assay and was the highest in methanol extracts (321.36±9.13 and 217.04±17.99 mg GAE/100 g). On the contrary ethanol extracts contained the highest total flavonoids content (67.88±1.05 and 39.70±3.19 mg CE/100 g). Hydroxycinnamic acid derivatives (caffeoylquinic acid, caffeoyl hexoside) and quercetin glycosides (rutin, quercetin pentosylhexoside, isoquercitrin, quercetin pentoside) were detected in methanol extracts of both samples by LC-MS. Blackthorn ethanol extracts showed pronounced ferric reducing activity in FRAP test (2.80±0.07 and 1.89±0.01 mmol Trolox /100 g) and highest ability to neutralise ABTS radical (41.02±0.77 and 45.84±1.01 mmol Trolox /100 g). On the other hand methanol extract of both samples exerted significant DPPH radical scavenging activity (3.38±0.1 and 2.61±0.17 mmol Trolox/100 g) and highest activity in β -carotene/linoleic acid bleaching test (20.89±2.28 and 21.16±2.43%). Methanol extract of both samples inhibited the enzymes: α -amylase (IC₅₀ 2.05±0.05 and 1.26±0.04 mg/ml) α -glucosidase (IC₅₀ 0.63±0.02 and 0.43±0.06 mg/ml), tyrosinase (IC₅₀ 1.0±0.07 and 0.57±0.02 mg/ml), and acetylcholinesterase (IC₅₀ 0.56±0.28 and 2.16±0.56 mg/ml). In addition the methanol extracts of both samples markedly stimulated the growth of investigated probiotic microorganisms.

The blackthorn fruit represents a rich source of biologically active compounds and although it is almost forgotten it should be used again in human nutrition to maintain health.

Keywords: *Prunus spinosa*, fruit, phenolics, antioxidant, enzyme inhibitory activity

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