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UTICAJ TERMIČKOG TRETMANA NA POLIFENOLNE SASTOJKE I ANTIOKSIDANTNA SVOJSTVA SEMENA LUŽNJAKA, *Quercus robur*

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Ispitivani su polifenolni sastojci i antioksidantna svojstva suvih MeOH ekstrakata nativnog (QN) i termički tretiranog (QT) semena lužnjaka, *Quercus robur*. Sadržaj ukupnih i netaninskih polifenola i tanina određivan je spektrofotometrijski, korišćenjem Folin-Ciocalteu reagensa¹, a sadržaj galne kiseline tečnom hromatografijom (HPLC)². Konstatovano je da nakon termičkog tretmana sadržaj tanina opada (sa 20,4 na 19,7%), a značajno raste količina netaninskih polifenola (sa 1,9 na 4,0%) i galne kiseline (sa 0,5 na 5,1%).

Za procenu antioksidante aktivnosti određivani su: ukupna antioksidanta aktivnost, UAA (FRAP test), sposobnost neutralizacije DPPH radikala i inhibitorni efekat na lipidnu peroksidaciju (LP) u lipozomima (TBA test).¹

Uzorci QN i QT ispoljili su značajnu antioksidantnu aktivnost, i to UAA je iznosila 2,44 i 3,76 $\mu\text{mol Fe}^{2+}/\text{mg}$, respektivno. Dobijene vrednosti aktivnosti su oko 2-3 puta niže u poređenju sa kvercetinom i vitaminom C. Uzorci QN i QT su koncentraciono zavisno neutralisali DPPH radikal ($\text{IC}_{50}=8,04$ i $5,77 \mu\text{g/ml}$) i inhibirali LP ($\text{IC}_{50}=32,13$ i $16,39 \mu\text{g/ml}$, respektivno).

Veća antioksidantna aktivnost ekstrakta termički tretiranog semena (QT), može se objasniti većim sadržajem galne kiseline, koja se oslobađa razgradnjom hidrolizujućih tanina tokom termičke obrade.

Literatura:

1. Kukić et al. (2006) *Biol Pharm Bull* 29, 725-9;
2. Giménez et al. (2000) *Cienc Tecnol Aliment* 3, 13-20.

INFLUENCE OF THERMAL TREATMENT ON POLYPHENOLIC COMPOUNDS AND ANTIOXIDANT PROPERTIES OF *Quercus robur* KERNELS

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Polyphenolic compounds and antioxidant properties of dried MeOH extracts of native (QN) and thermally treated (QT) kernels of English Oak, *Quercus robur* were investigated. The content of total and simple polyphenols and tannins was determined spectrophotometrically using FC-reagent¹, while gallic acid content was estimated using HPLC². After thermal treatment tannin content was decreased (from 20,4 to 19,7%), with significant increase of simple polyphenols and gallic acid content (from 1,9 to 4,0%, and from 0,5 to 5,1%, respectively).

Antioxidant activity was estimated using FRAP test (total antioxidant activity, TAA), scavenging of DPPH radical and TBA test (inhibition of lipid peroxidation, LP in liposomes)¹.

Samples QN and QT showed substantial antioxidant activity. TAA was 2.44 and 3.76 $\mu\text{mol Fe}^{2+}/\text{mg}$, respectively. Comparing to quercetin and L-ascorbic acid these values were *ca* 2-3 times lower. Both samples concentration-dependently scavenged stable DPPH radical ($\text{IC}_{50}=8.04$ and $5.77 \mu\text{g}/\text{ml}$), and inhibited LP ($\text{IC}_{50}=32.13$ and $16.39 \mu\text{g}/\text{ml}$, respectively).

Higher antioxidant activity of extract of thermally treated kernels (QT) could be explained as a consequence of thermal degradation of hydrolysable tannins and, therefore, increased gallic acid content.