Title Effect of steam treatment on soluble phenolic content and antioxidant activity of the Chaga mushroom (*Inonotus obliquus*)

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Abstract

The effect of steam treatment on free phenolic acids in Chaga mushrooms (*Inonotus obliquus*) was investigated. Untreated and steam-treated (120 °C, 3 h) samples of *I. obliquus* were extracted with organic solvents and free phenolic acid-containing fractions were isolated. Free phenolic acids were determined by LC/PDA (liquid chromatography/photodiode array), ESI LC/MS (electrospray ionisation liquid chromatography/mass spectrometry), and GC/MS (gas chromatography/mass spectrometry). After the steam treatment, the soluble phenolic content determined by modified Folin–Ciocalteu method was increased and antioxidant activity was enhanced, as confirmed by a DPPH (1,1-diphenyl-2-picrylhydrazyl) radical scavenging activity assay. The amounts of vanillic acid, protocatechuic acid, syringic acid, and 2,5-dihydroxyterephthalic acid were increased significantly as the result of the steam treatment, suggesting that the liberation of low molecular weight free phenolics was enhanced by the steaming process. Consequently, the radical scavenging activity was also significantly enhanced by free phenolics produced using this method.