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Antioxidant activity of the essential oils of different parts of Juniperus communis subsp. hemisphaerica and Juniperus oblonga

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Abstract

The essential oils of different parts of Juniperus communis subsp. hemisphaerica (Presl) Nyman (Cupressaceae) and Juniperus oblonga M. B. were examined for their potential radical scavenging activity. The compositions of the essential oils of these plants were studied qualitatively and quantitatively by GC and GC-MS. The main components of the essential oils as well as positive controls were subjected to antioxidant testing. A rapid evaluation for antioxidants, using two TLC screening methods, showed that all tested oils and their main components have antioxidant activity. The abilities of the volatile oils to act as nonspecific donors for hydrogen atoms for electron were checked in the diphenylpicrylhydrazyl (DPPH) assay. In the DPPH assay, the strongest effect among the essential oils was measured for the oil of leaves of male J. communis subsp. hemisphaerica at a concentration of 4 μL/mL (24.0%) In the deoxyribose degradation assay, the essential oils, pure components, and positive controls were tested at different concentrations. Most of the tested compounds showed some antioxidant effects. The fruit oil of J. oblonga has the strongest effect among the tested volatile oils. The deoxyribose assay was modified in three different ways to assess whether the oils exhibited site-specific effects. The results of the current study, which demonstrate the DPPH scavenging activity of the essential oils of the of leaves of male J. communis subsp. hemisphaerica and the OH radical scavenging effects of the fruit oil of J. oblong suggest the use of these two essential oils in very low concentrations for preserving food materials. © 2007 Informa Healthcare USA, Inc.

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Author keywords

Antioxidant activity; Deoxyribose assay; DPPH assay; Essential oil; J. communis subsp. hemisphaerica; J. oblonga; TLC screening

Indexed Keywords

EMTREE drug terms: 1,1 diphenyl 2 picrylhydrazyl; deoxyribose; essential oil; hydrogen; Juniperus communis extract; Juniperus oblonga extract; plant extract; scavenger; unclassified drug

EMTREE medical terms: antioxidant activity; article; concentration (parameters); controlled study; drug synthesis; electron; female; food preservation; gas chromatography; Juniperus; male; mass spectrometry; nonhuman

Species Index: Cupressaceae; Juniperus communis subsp. hemisphaerica; Juniperus oblonga

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