J Am Oil Chem Soc
DOI 10.1007/s11746-009-1422-3

ORIGINAL PAPER

Chemical Characterization of the Seed and Antioxidant Activity of Various Parts of Salvadora persica

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Received: 11 February 2009 / Revised: 26 May 2009 / Accepted: 5 June 2009

Abstract This study investigated the fatty acid, tocopherol, sterol and total phenolic compounds of Salvadora percica seeds as well as the potential antioxidant activity of the leaves, bark and seedcake extracts. Two samples of S. persica seed collected from Kordofan (sandy soil) and Gezira (heavy clay soil) states in Sudan were used. The predominant fatty acids were 14:0, 16:0 and 18:1 representing45.50, 35.12 and 10.20% for Kordofan and 45.20, 34.49 and 10.66% for Gezira samples. Gamma-tocopherol was the predominant tocopherol in both samples representing 61.3 and 61.7% of the total tocopherols, respectively, followed by a-tocopherol at 21.1 and 20.2%, respectively. Total sterol content was 3399.6 and 3385.3 mg/kg for Kordofan and Gezira samples, respectively. Beta-sitosterol, campesterol, stigmasterol and D5-avenasterol were predominant. The content of total phenolic compounds was determined in S. persica bark (SPB), S. persica leaves (SPL), and S. persica seedcake (SPC) extracts of each sample according to the Folin– Ciocalteau method as 111.70, 132.60, and 66.10 mg GAE/g extract for the Kordofan sample. They were found to be 105.90, 129.10 and 62.90 mg GAE/g extract in the Gezira sample, respectively. The two samples were significantly (P\0.05) different in total phenolic content with SPL as the highest in both samples. The methanolic extracts of SPL, SPB, and SPC in both samples were markedly effective in inhibiting the oxidation of linoleic acid and subsequent bleaching of b-carotene in comparison with the control. But they were less effective than butylated hydroxyanisole.

Keywords Antioxidant activity _ Fatty acid _ Oxidative stability _ Salvadora persica _ Sterols _ Tocopherols