Determination of antioxidant activity of gum arabic: An exudation from two different locations

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Abstract

Gum arabic (GA) is the main product of acacia trees. As a raw and commercial samples, GA was extracted with methanol and analysed to measure the antioxidant activity using five methods: 2,2-diphenyl-1-picrylhydrazyl (DPPH), Folin-Ciocalteu indexes (FCI), which indicate total phenolic compounds (TPC), oxygen radical absorbance capacity (ORAC), ferric reducing antioxidant power (FRAP), and cupric reducing antioxidant capacity (CUPRAC). This study used antioxidant assays to detect TPC and selected appropriate and inexpensive methods to determine the antioxidant capacity of GA samples. The results reveal that the FCI, ORAC, and CUPRAC are correlated highly with FRAP. Person's correlation coefficient (r) values are 0.98, 0.93, and 0.99, respectively, based on the sample size of (n = 8). This means that the TPC of GA is highly correlated with their antioxidant activities that are measured by these three methods. Hence the FCI, ORAC, and the CUPRAC methods are more effective and simpler. They had similar predictive power to the FRAP of GA antioxidant activity. Consequently, GA is generally recognized as being slightly acidic which may have been obtained from appropriate methods of the antioxidant capacity detection. This acidity is due to the electronic transfer mechanism based on the selection of the working pH.

Keywords

Author Keywords: antioxidants; extraction; CUPRAC; FRAM TPC; DPPH; ORAC

KeyWords Plus: RADICAL ABSORBENCY CAPACITY; IN-VITRO; EXTRACTION TECHNIQUES; FRUIT EXTRACTS; MECHANISMS; ASSAYS; DPPH; CAPABILITY; PLASMA; ORAC

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