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Chemical composition, total phenolic content, antioxidant and antinutritional characterisation of exudate gums

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Abstract

Present study was conducted to determine the chemical composition, antioxidant potential and antinutritional factors in some plant gums that have been commercially used as additives in different food formulations. For this purpose, exudate gums were chosen which included commercially used acacia and karaya gum. The properties were compared with an underutilised gum exuded from apricot tree, called apricot gum. Monosaccharide composition and linkages in gum polysaccharides were studied using Electron spray ionization-mass spectrometry coupled with time-of-flight analyser (ESI-MS-TOF). The assay involves ionisation of gum polysaccharides by passing their organic solution into electric field and converting them into a mist of charged droplets that are further analysed and detected using Time-of-flight mass spectrometry. Relative array of peaks elucidated the presence of glucosyl, galactosyl and a small proportion of uronic acid units in all gums. Spectral fragmentation distribution was bimodal with polydispersity values greater than or equal to two ($M_w/M_n \geq 2$). In all the antioxidant assays, methanol and ethanol were separately used for extraction. Total phenolic content, ferrous ion chelating ability and reducing power of the gums varied from 0.44-1.25 mg GAE/g, 11.80-60.42 % and 0.12-0.23 AAE/g, respectively. The DPPH radical scavenging ability (12.03-27.23 %) and bile acid binding activity (40.98-

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