EXTRACTION, COMPARATIVE PRECIPITATION USING THREE SOLVENT SYSTEMS (METHANOL, ETHANOL, ACETONE) AND CHARACTERIZATION OF BOMBAX COSTATUM’S CALYX GUM

APINEGA, L.A.¹, DLAMA, S.², OFOEGBU, O.² AND SANI, Y.M.¹

¹Department of Pharmaceutical and Medicinal Chemistry, Ahmadu Bello University, Zaria, Nigeria
²Department of Chemistry, University of Agriculture, Makurdi, Nigeria

ABSTRACT

Between 1993 and 1998, world demand for gum of pharmaceutical importance grew at an average rate of 7.4 percent, this is because there is no significant health risk attached to them and are inherently more rigid and thus give a more viscous solution at relatively very low concentration. In this article we seek to establish a viable extraction and precipitation method for isolation of gum while determining the effect of solvent based on polarity, on some physicochemical properties of Bombax costatum calyx gum using the simplest method possible. The comparative solvent extraction of the gum at varied ratio of gum:solvent was carried out with acetone, ethanol and methanol and product with the best yield and organoleptic properties was subjected to further studies. The percentage yields of the gum were 12% with methanol and 14.9% with acetone while the highest yield is 18.5 with ethanol. The gum extracted with ethanol has better organoleptic properties and was screened for phytochemical constituents and was positive for steroids, tannins, anthraquinones among other secondary metabolites. The B. costatum calyx gum extracts were observed to be insoluble in polar solvents and the elemental composition probing gave the presence of Ca, K, Mg, corroborating with previously published works. The major functional groups from FTIR spectrum includes, (-CH₃CO-) and (-COO-) Findings from this research suggests that B. Costatum’s calyx gum, with proper handling and storage can serve complimentary or substitute for commercial applications in the packaging, pharmaceutical as well as food and beverage sectors when compared with other industrial gums.

Key words: Bombax costatum, gum, organoleptic, phytochemicals
*Correspondence: apinegalevi@gmail.com