

SOME PROPERTIES OF BOMBAX COSTATUM LEAF GUM AND ITS APPLICATION AS STABILISER IN EMULSION

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Abstract

Bombax costatum-Pellegr Leaf (BCL) is a common African food thickener, rich in gum. However, limited information on its gum characteristics has hampered its commercial exploitation. This study was conducted to isolate gum from BCL flour, characterise it and investigate its suitability as emulsion stabiliser. Gum was isolated by hydro-extraction, purified, freeze-dried, pulverised and characterised using standard methods. Emulsions were prepared using homogeniser with Bombax costatum Leaf Gum (BCLG) as stabiliser and the stability evaluated by monitoring the creaming rate. Data were analysed by descriptive statistics, regression and ANOVA at $\alpha_{0.05}$. The gum content of BCL was 45.60%. The X-ray diffractometer showed that BCLG was amorphous. The FT-IR absorption bands at 1700 cm^{-1} (free C=O) and 1609 cm^{-1} (COO-) indicated uronic acid, which colorimeter showed to be 32.0%. The elemental analyser revealed carbon (40.47%), hydrogen (5.44%), nitrogen (2.29%) and sulphur (0.02%) in the gum. Polarimeter revealed specific optical rotation of -19.33° . HPLC showed constituent monosaccharides of its hydrolysate as rhamnose, galactose and mannose (ratio 1:2:2). Intrinsic viscosity and viscosity average molecular weight of BCLG were 5.80 dL/g and 5.35×10^5 g/mol respectively. The gum dispersions exhibited shear thinning behaviour at concentrations of 5 and 10%. BCLG at low concentration range of 0.025 – 0.5%, inhibited creaming of 10% olive oil-in-water emulsion with a third order polynomial fit ($R^2 = 0.9923$), indicating a good stability. *Bombax costatum* leaf gum exhibited application properties which make it exploitable commercially.

Key words: Bombax costatum Leaf Gum, Uronic acid, Oil-in-water emulsion, Inhibition of creaming, Rheology modifier.