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## Some properties of Bombax costatum leaf gum and its application as stabiliser in emulsion

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There is growing demand for commercial grades of plant Polysaccharide Gums with improved properties for application as rheology modifiers in industries (food, pharmaceutical and cosmetics) because they are cheaper, non toxic and biodegradable. *B. costatum* is a common food thickener in Nigeria with potentials to be exploited as a commercial source of industrial gum. However, there is limited information on its polysaccharide characteristics which can assist in putting it on the list of potential industrial gums. Thus, gum was isolated from *Bombax costatum* leaf flour (yield: 45.6%), characterised and used as stabiliser in emulsion. The elemental analysis showed that *Bombax costatum* leaf gum (BCLG) contained: carbon (40.47%), hydrogen (5.44%), nitrogen (2.29%) and sulphur (0.02%). Scanning electron microscopy showed that the gum particles were irregular in shape while x-ray diffractometry showed they were amorphous. The Differential Scanning Calorimetry showed that the gum exhibited two thermal transitions: endothermic (108.8oC;  $\Delta H=498.44$ J/g) and exothermic (284.08oC;  $\Delta H=220.97$ J/g). Thermogravimetric analysis showed its first mass loss as 14.03% at 81.55oC and second mass loss was 47.95% at 274.37oC. The pH of 1% aqueous dispersion of BCLG was 6.36 and its specific optical rotation was -19.33o. High Performance Liquid Chromatography showed constituent monosaccharides of its hydrolysate as rhamnose, galactose and mannose (ratio 1:2:2). The uronic acid determined with m-hydroxydiphenyl at 520 nm was  $32.00\pm 0.2\%$  and was confirmed by FTIR-Spectroscopy (-COO-, 1700, 1609 and 1425  $\text{cm}^{-1}$ ). The intrinsic viscosity and viscosity average molecular weight of BCLG were 5.8 dL/g and 534957 Da respectively. The gum dispersion 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. BCLG exhibited good physicochemical properties and showed potential for commercial exploitation.

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