

Potential application of the West African frankincense (*Boswellia dalzielii* Hutch) for drug and perfumery products

Boswellia dalzielii is the West African species of the frankincense producing genus (B. carterii, B. frereana and B. serrata are the more popular congeners). Its ethnobotanical uses include the treatment of rheumatism, venereal diseases and gastro-intestinal disorders among others. Scientific investigations were carried out to evaluate the biological properties relevant to their ethnomedical uses and to better understand the chemistry of the plant. This is with a view to identify possible applications for medicinal, cosmetic and industrial purposes. The stem bark was subjected to solvent extraction and activity-directed fractionation to isolate bioactive compounds. The isolated compounds were characterized using joint spectroscopic techniques, including 2-D NMR and mass spectrometry. The gum resin was steam-distilled to obtain volatile oil, which was analyzed by GC-MS. Another portion of gum resin was also extracted by organic solvent and fractionated by column chromatography. From the results obtained, the antimicrobial/antioxidant activity of the stem bark was accounted by isolated compounds – protocatechuic acid, gallic acid and ethyl gallate with minor contribution from a novel stilbene glycoside and a cembrane diterpenoid (incensole). The extracts also demonstrated antifungal, anti-inflammatory, cytotoxic and hypoglycemic effects. The gum resin (frankincense) showed anti-inflammatory activity and yielded volatile oil consisting of mainly monoterpenes (fragrant essence). The extract of gum resin yielded incensole and 3-O-acetyl-11-keto-boswellic acid (AKBA). The spectrum of observed biological activities justifies the ethnomedical uses and suggests great potential for further drug development. The essential oil can be employed in perfumery products and in related industry.

Biography

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