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Qualitative Assessment of Potential Bioactive Compounds in African Oil Bean Seeds (*Pentaclethra mycrophylla* Benth.)

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ABSTRACT

Introduction: African oil bean tree is a large wild woody plant that belongs to the family Leguminous and sub-family Mimosoidae. It produces seeds that are dorsa-ventrally flat, hard, brown in colour and about 6 cm wide. The seeds are cited among the lesser known and under exploited legumes. The oil bean seeds contain 4 - 17% carbohydrate, 36.2 – 43.89% protein, 44 - 47 % oil which is rich in oleic acid and linoleic acid. The raw beans are bitter in taste and contain substantial antinutritional factors such as pancine, cyanide, oxalate, saponins, phytic acid, phytate, tannin and toxic alkaloid. Despite the limited traditional applications of the seeds in Nigeria, the seed has been reported to contain a large reservoir of phytochemical; therefore, the need to profile its bioactive potentials.

Objective: This study assessed the bioactive potentials of African oil bean seeds.

Methodology: African oil bean seed mesocarp was ground into a flour of 0.05 mm size. The flour was soaked in 60% (v/v) acetone at solvent-to-solid ratio of 10:1 and continuously agitated for 30 min. at room temperature (27 ± 2°C). After extraction, a rotary vacuum extractor (Eyela, A-1000S, Japan) at 40°C was used to remove the solvent. The crude extract was separated and subjected to Gas-Chromatography/Mass Spectrometry (GC-MS) for sample characterization.

Result: The results of the study revealed that African oil bean seeds contain bioactive compounds such as amitriptyline and venlafaxine which are antidepressants; mexiletine, a bioactive implicated in restoring regular heartbeat (antiarrhythmia); N-methyl-1-[4-(methylsulfanyl)phenyl] propan-2-amine and thiodiglycol which are enzyme inhibitors. Antitumor compounds such as 4-butoxy phenol and N'-Benzyl-N,N-dimethyl ethylene diamine as well as 3-Methoxy-4-methyl-(2-aminobutyl) benzene which is a bio stimulant were identified.

Conclusion: This study revealed that African oil bean seed is a good source of bioactive compounds, hence, its consumption would offer measurable physiological benefits.

Keywords: African oil bean seed, bioactive compounds, acetone, GC-MS, physiological benefits.