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A review of ethnomedicinal uses, phytochemistry, and pharmacological potential of Paullinia pinnata L. (Sapindaceae)

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Objectives:

Paullinia pinnata L. (Sapindaceae), a climbing shrub, is traditionally used across Africa for managing several disease conditions including malaria and wounds. It has become a major component of many antimalarial, wound healing, and aphrodisiac herbal products in Ghana. Evidence validating its efficacy and safety is, however, fragmented and this calls for an appraisal to consolidate existing data and guide future drug discovery efforts. This study sought to review and synthesize literature on the ethnomedicinal uses, phytochemistry, and pharmacological activities of this medicinal plant.

Methods:

A narrative review was conducted using searches in PubMed, ScienceDirect, Scopus, and Google Scholar for studies published between 2000 and 2023. Peer-reviewed articles and theses reporting traditional uses, phytochemical constituents, or pharmacological activities of P. pinnata were included whilst papers without primary data, duplicate reports, or non-English publications were excluded. Data was validated at multiple levels and relevant findings extracted, analyzed, and summarized.

Results:

P. pinnata is used ethnomedicinally against malaria, wounds, inflammation, infertility, and snakebites. Phytochemical investigations have revealed saponins, flavonoids, alkaloids, tannins, and terpenoids with over 50 different compounds isolated from various organs of the plant. Pharmacological studies report antimicrobial, antioxidant, anti-inflammatory, antidiabetic, hepatoprotective, and anti-snake venom activities. However, most findings are limited to in vitro or animal studies, with few mechanistic insights and little data on toxicity or clinical efficacy.

Conclusion:

P. pinnata possesses diverse bioactive compounds and pharmacological effects that validate its ethnomedicinal applications. However, lack of standardization, safety profiling, and clinical validation of the plant could affect its acceptance.