

Standardization of the Roots of *Gnidia stenophylla* Gilg: A Potential Medicinal Plant of South Eastern Ethiopia Traditionally Used as an Antimalarial

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Abstract : Lack of quality control standards for medicinal plants and their preparations is considered major barrier to their integration in to effective primary health care in Ethiopia. Poor quality herbal preparations led to countless adverse reactions extending to death. Denial of penetration for the Ethiopian medicinal plants in to the world's booming herbal market is also another significant loss resulting from absence of herbal quality control system. Thus, in the present study, *Gnidia stenophylla* Gilg (popular antimalarial plant of south eastern Ethiopia), is standardized and a full monograph is produced that can serve as a guideline in quality control of the crude drug. Morphologically, the roots are found to be cylindrical and tapering towards the end. It has a hard, corky and friable touch with saddle brown color externally and it is relatively smooth and pale brown internally. It has got characteristic pungent odor and very bitter taste. Microscopically it has showed lignified xylem vessels, wider medullary rays with some calcium oxalate crystals, reddish brown secondary metabolite contents and slender shaped long fibres. Physicochemical standards quantified and resulted: foreign matter (5.25%), moisture content (6.69%), total ash (40.80%), acid insoluble ash (8.00%), water soluble ash (2.30%), alcohol soluble extractive (15.27%), water soluble extractive (10.98%), foaming index (100.01 ml/g), swelling index (7.60 ml/g). Phytochemically: Phenols, flavonoids, steroids, tannins and saponins were detected in the root extract; TLC and HPLC fingerprints were produced and an analytical marker was also tentatively characterized as 3-(3,4-dihydro-3,5-dihydroxy-2-(4-hydroxy-5-methylhex-1-en-2-yl)-7-methoxy-4-oxo-2H-chromen-8-yl)-5-hydroxy-2-(4-hydroxyphenyl)-7-methoxy-4H-chromen-4-one. Residue wise pesticides (i.e. DDT, DDE, g-BHC) and radiochemical levels fall below the WHO limit while Heavy metals (i.e. Co, Ni, Cr, Pb, and Cu), total aerobic count and fungal load lie way above the WHO limit. In conclusion, the result can be taken as signal that employing non standardized medicinal plants could cause many health risks of the Ethiopian people and Africans' at large (as 80% of inhabitants in the continent depends on it for primary health care). Therefore, following a more universal approach to herbal quality by adopting the WHO guidelines and developing monographs using the various quality parameters is inevitable to minimize quality breach and promote effective herbal drug usage.

Keywords : *Gnidia stenophylla* Gilg, standardization/monograph, pharmacognostic, residue/impurity, quality

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