

MOLLUSCICIDAL ACTIVITY OF KHAYA GRANDIFOLIOLA EXTRACTS AGAINST FRESHWATER SNAILS IN KHARTOUM STATE- SUDAN

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Abstract: *The treatment of freshwater snails with sub-lethal concentration of herbal molluscicides was effective in altering the amino acid profile of this snail species which contributed to the impairment of snails laying capacity. The herbal molluscicides were reported to contain diverse chemical profile; steroids and triterpenes, flavonoids, tannins and phenolic compounds in addition to the essential oils. The diversity of chemical constitution of different Callistemon species reflects diversity in its biological activities. The botanical molluscicides are of economic importance, especially in developing countries. Also, there is a continuous need to search for new plant species with ideal molluscicidal properties. Different plants have been reported as molluscicides. The present study was performed to study the molluscicidal activity of aqueous and ethanolic extracts of Khaya grandifoliola bark against freshwater snails. It is experimental study was carried out in Al-Keriab area in East Nile locality, Khartoum state/ Sudan, a total of 190 snail samples were randomly collected by using deep scoop from the main water canals supplying the irrigated schemes of the study area. The results showed that the aqueous extracts of Khaya grandifoliola barks possess 100% molluscicidal property at concentration of 1 g/L.*

Keywords— Molluscicidal Activity; Khaya grandifoliola; Schistosome; Snails; Al-Keriab Area

1. INTRODUCTION

Currently, there is an increased attention for the use of new molluscicides which are highly effective, rapidly biodegradable, less expensive, readily available and probably easily applicable with simple techniques than synthetic molluscicides. One of the new trends in the biological control of vectors of diseases is testing the toxicity of plant extracts, as alternatives to chemical molluscicides, which proved to be environmentally safe and have less residual activity [1]. There are many restrictions of using molluscicides with fresh water. Therefore, the safety of plant extracts to human being is an advantage

for studying their effect against the snail vectors of schistosomiasis [2]. The treatment of snails with sub-lethal concentration of herbal molluscicides was effective in altering the amino acid profile of this snail species which could be contributed to the impairment of snail's egg laying capacity, snail-schistosome miracidia finding mechanisms and immune response of the molluscan hosts but has no effect on the mammalian skin penetration rate by schistosome cercariae. The herbal molluscicides of *K. grandifoliola* were reported to contain diverse chemical profile; steroids and triterpenes, flavonoids, tannins and phenolic compounds, tetradecahydroxanthenediones, in addition to the essential oils. The diversity of chemical constitution of different *Callistemon* species reflects diversity in its biological activities; antibacterial and antifungal activities, molluscicidal activity. Reviewing the current literatures *Khaya grandifoliola* were not intensively investigated for molluscicidal activity. So, the aim of the present study is to evaluate the efficacy of the aqueous and ethanolic extracts of *Khaya grandifoliola* barks as molluscicides against freshwater snails [4]. The intermediate snail host is an essential link in the schistosome life cycle. Knowledge of its ecology, bionomics and population dynamics are required for a proper understanding of the disease transmission, or as a basis for planning and evaluation of measures directed against snails in the control of the disease [5]. Despite the ability of schistosome species to develop in a variety of definitive mammalian hosts, the range of snail that serves as intermediate hosts is limited. Pulmonate snails of the family Planorbidae are the intermediate snail hosts for human schistosomes in Africa, the Middle East, the Caribbean Islands and South America. *Khaya grandifolio* plants are usually deciduous, monoecious, medium-sized to large tree up to 40 m tall; bole branchless for up to 23 m, often twisted or leaning near the top, up to (120-200) cm in diameter, usually with buttresses up to 3 m high; bark surface grayish brown, rough, exfoliating in small circular scales and becoming pitted, inner bark dark pink to reddish, with white streaks, exuding a clear gum; crown large, rounded; twigs glabrous. Leaves arranged spirally but clustered near ends of branches, paripinnately compound with 3-5 pairs of leaflets; stipules absent; petiole and rachis together up to 50 cm long; petiolules 0.5-1 cm long; leaflets opposite or nearly so, elliptical to ovate-elliptical or oblong-elliptical, (30) cm × 5-10 cm, cuneate to obtuse or rounded and slightly asymmetrical at base, shortly but distinctly acuminate at apex, often with twisted acumen, margins entire or wavy, thickly papery to thinly leathery, glabrous, pinnately veined with 9-15 pairs of lateral veins. The average longevity of the snail varies among the species

and with the local environmental conditions [6]. In many malaria endemic countries, like the tropics, the extract of *Khaya grandifoliola* is used as an antimalarial herbal remedy. The bark and seeds of *K. grandifoliola* are the most common parts used for treatment and are extracted by infusion or decoction. The extracts have proven to fight against the *P. falciparum* parasite. The bitter-tasting bark is used in traditional medicine. It is widely used as a treatment against fever caused by malaria, whilst decoctions are also taken to treat stomach complaints including gastric ulcers and diarrhoea caused by intestinal parasites; pain after childbirth; and gonorrhoea.

Conclusion:

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