

INSECT ANTIFEEDANT, GROWTH-INHIBITING AND LARVICIDAL COMPOUNDS FROM *RAPANEA MELANPHLOES* (MYRSINACEAE)

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(Accepted 12 May 1996⁺)

Abstract—The already known benzoquinone, embelin (mixed with rapanone), and two new benzoquinones, myrsinone and myrsinaquinone, were isolated from the Myrsinaceae plant, *Rapanea melanphloes* (L.), Mez. All the three compounds showed antifeedant activity when bioassayed on nymphs of the desert locust, *Schistocerca gregaria* (Forsk.). They also inhibited growth of second-instar larvae of mosquito *Aedes aegypti* at low doses, and had acute lethal effects at higher doses.

Key Words: *Rapanea melanphloes*, *Schistocerca gregaria*, *Aedes aegypti*, embelin, myrsinone, myrsinaquinone, benzoquinones, antifeedants, growth inhibitors, larvicides

Résumé—La benzoquinone déjà connue, l'embéline (mélangée à la rapanone), et deux nouvelles benzoquinones, la myrsinone et la myrsinaquinone, ont été isolées de la plante Myrsinaceae, *Rapanea melanphloes* (L.), Mez. Tous les trois composés ont montré une activité phagodéterrente dans des essais biologiques sur les nymphes du criquet du désert, *Schistocerca migratoria* (Forsk.). À faibles doses ils ont aussi inhibé la croissance et à fortes doses ils ont produit des effets léthaux aigus pour le deuxième stade larvaire chez le moustique *Aedes aegypti*.

Mots Clés: *Rapanea melanphloes*, *Schistocerca gregaria*, *Aedes aegypti*, embéline, myrsinone, myrsinaquinone, benzoquinones, phagodétérrents, inhibiteurs de croissance, larvicides

INTRODUCTION

Rapanea melanphloes (L.), Mez (Myrsinaceae), is an ethno-medically important plant in East Africa (Kokwaro, 1976). It is distributed in some highland areas of Kenya and is used as an anthelmintic, for both humans and livestock. The chief chemical components of the plant are the long alkyl side chain-benzoquinones, which constitute approximately 10% of the dry weight of its fruit, 2.7% of the stem bark, 7.3% of the root bark and 2.5% of the leaves (Midiwo et al., 1988). The distribution of the benzoquinones in the plant tissues suggests a defence function for these compounds against attack by insects. The purpose of this study

was therefore to isolate the various benzoquinones that occur in *R. melanphloes* in reasonable amounts and evaluate their biological activity on locusts and mosquitoes.

MATERIALS AND METHODS

Rapanea melanphloes fruits, leaves and stems were collected from Kithembe Hills of Machakos District, Kenya. A voucher specimen is deposited in the Department of Botany Herbarium of the University of Nairobi.

To establish the histochemistry of the benzoquinones in the plant, the parts collected were sectioned into thin slices before staining with ammonia; this gave a purplish-blue coloration for

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⁺See Editor's Note at the end of this issue.