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CHEMICAL INVESTIGATION OF *MYRISTICA DACTYLOIDES*

A thesis presented by

Dedicated to
A. M. A. PRIYADARSHANI
my parents.

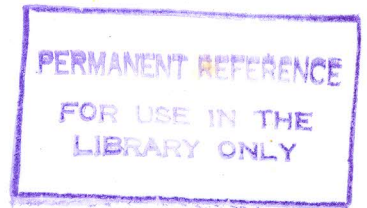
in partial fulfilment of the requirement
for the award of

my husband.
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ABSTRACT

This thesis describes the isolation procedures and the structural elucidation studies of eight aryl alkanones and five lignans from *Myristica dactyloides*.

M. dactyloides (Myristicaceae) grows in Sri Lanka and the Southern part of India.

Chemical investigation of the stem bark of this plant gave aryl alkanones, lignans and other compounds.

Separation of the hot hexane extract gave four aryl alkanones: 1-(2'-hydroxy-6'-methoxyphenyl)tetradecan-1-one, 1-(2'-hydroxy-6'-methoxyphenyl)-9-(3'',4''-methylene dioxyphenyl) nonan-1-one, 1-(2',6'-dihydroxyphenyl)tetradecan-1-one and 1-(2',6'-dihydroxyphenyl)-9-phenylnonan-1-one and three lignans: rel.(8S,8'S)-bis(3,4-methylenedioxy)-8,8'-neolignan, rel.(8S,8'R)-dimethyl-(7S,7'R)-bis(3,4-methylenedioxyphenyl)tetrahydrofuran and rel.(8S,8'S)-dimethyl-(7S,7'R)-bis(3,4-methylenedioxyphenyl)tetrahydrofuran. All three lignans are new compounds, while the arylalkanones have been previously reported from the same plant.²⁵

Chromatographic separation of the hot dichloromethane extract gave another four aryl alkanones: 1-(2',6'-dihydroxyphenyl)-9-(3'',4''-methylenedioxyphenyl)nonan-1-one, 1-(2'-hydroxy-6'-methoxyphenyl)-9-(4''-hydroxyphenyl)nonan-1-one, 1-(2',6'-

CONTENTS

dihydroxyphenyl)-9-(4''-hydroxyphenyl)nonan-1-one and 1-(2',6'-dihydroxyphenyl)-9-(4''-hydroxy-3''-methoxyphenyl)nonan-1-one and another two lignans: rel.(8S,8'R)-dimethyl-(7S,7'R)-bis(4-hydroxy-3-methoxyphenyl)tetrahydrofuran and rel.(8S,8'S)-dimethyl-(7S,7'S)-bis(4-hydroxy-3-methoxyphenyl)tetrahydrofuran. Out of the four aryl alkanones, the most polar 1-(2',6'-dihydroxyphenyl)-9-(4''-hydroxy-3''-methoxyphenyl)nonan-1-one and the lignan; rel. (8S,8'S)-dimethyl-(7S,7'S)-bis(4-hydroxy-3-methoxyphenyl)tetrahydrofuran were identified as new natural products.

The chemistry and bioactivity of *M. dactyloides*
Introduction to lignans
Biological activity of lignans

3. Results and Discussion

The extracts of the stem bark of *M. dactyloides* with hexane, CH₂Cl₂, EtOAc and MeOH were checked for antifungal, anti-HIV and insecticidal activities. Insecticidal activity was observed only for CH₂Cl₂ extract. All the extracts showed neither antifungal nor anti-HIV activity.

Isolation of aryl alkanones and lignans from the stem bark of *M. dactyloides*
Chemical investigation of the hot hexane extract of *M. dactyloides*
Biological activities of *M. dactyloides*

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3. Experimental
4. References