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CHEMICAL CONSTITUENTS OF SOME SRI LANKAN
RUTACEAE AND THEIR BIOLOGICAL ACTIVITY

A THESIS SUBMITTED BY

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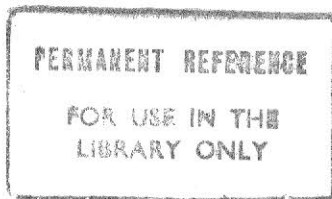
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ABSTRACT

This thesis is presented in five chapters.

Chapter 1 consists with introduction to the family Rutaceae and three Sri Lankan Rutaceae species, *Limonia acidissima*, *Pleiospermium alatum* and *Luvunga angustifolia* along with previous chemical work on these genera. Medicinal uses and biological properties of *L. acidissima* are also included.

Chapter 2 describes the isolation and structure elucidation of a limonoid, obacunone (58) from the root bark and a new limonoid named acidissimin (68) from the stem bark of *L. acidissima*. The extractives of the root bark of *P. alatum* afforded two limonoids 1-(10--19)-abeo-7 α -acetoxy-10 β -hydroxyiso-obacunoic acid-3,10-lactone (70) and limonyl acetate (71).

Chapter 3 presents the isolation and structure elucidation of five acridone alkaloids from the root bark and stem bark of *P. alatum*. One of the acridones, 1,5,6-trihydroxy-2,3-dimethoxy-10-methyl-9-acridone (141) is a new compound while another 1-hydroxy-2,3,5,6-tetramethoxy-10-methyl-9-acridone (139) is a new natural product. The extractives of the stems of *L. angustifolia* yielded two acridone alkaloids; one of the acridones, 1-hydroxy-2,3,5-trimethoxy-10-methyl-9-acridone (5-methoxyarborinine) (140) is a new natural product. This chapter also contains a comprehensive review on N-methylacridone alkaloids from higher plants covering literature published upto the end of 1988.

Isolation and structure elucidation of eight coumarins, 2,6-dimethoxybenzoquinone (162) and 6-hydroxy-4-methoxy-1-methyl-2(1H)-quinolone (160) from the extractives of *L. acidissima*; six coumarins along with a rare coumarin glycoside, β -L-apiopyranosyl-(1 \rightarrow 6)- β -D-glucopyranosyl-umbelliferone (167) from the extractives of *P. alatum* and two coumarins from *L. angustifolia* are discussed in Chapter 4.

Antifungal and insecticidal activity of *L. acidissima* and *P. alatum* are discussed in Chapter 5. Extractives of *L. acidissima* and *P. alatum* showed antifungal activity against *Cladosporium cladosporioides* and active compounds of *L. acidissima* were found to be psoralen (16), xanthotoxin (17), ostheno1 (155) and 2,6-dimethoxybenzoquinone (162). The active component of *P. alatum* was found to be seselin (165). Insecticidal activity against *Callosobruches chinensis* was detected in the extractives of stem bark and root bark of *L. acidissima*, and the active compound was found to be bergapten (12). The extractives of *P. alatum* showed insecticidal activity against *Aphis craccivora*. The compounds responsible for insecticidal activity in *P. alatum* were found to be 1-(10 \rightarrow 19)-abeo-7 α -acetoxy-10 β -hydroxyiso-obacunoic acid-3,10-lactone (70), 5-hydroxynoracronycin (84), 5-hydroxyarborinine (51), 1,5,6-trihydroxy-2,3-dimethoxy-10-methyl-9-acridone (141), 1-hydroxy-2,3,5,6-tetramethoxy-10-methyl-9-acridone (139), aurapten (1), seselin (165), xanthoxyletin (166), umbelliferone (11), limonyl acetate (71) and suberenol (9).