FINAL REPORT

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Grantees: Prof. G.P.Wannigama, Dr. B.M.R.Bandara, Dr. N.L.V.V. Karunaratne and Prof. S. Sotheeswaran

Title of Project: Alkaloids, coumarins, triterpenes and other biologically active principles of some plant families of Sri Lanka.

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Abstract: The following plants have been studied during the period:

(a) (i) Cyclea burmanni (කැහි පිත්තන්) and (ii) Diploclisia glaucescens (ඇට තිත්ත වැල්) (Menispermaceae) and

(b) (i) Litsea gardneri (තලන්) and (ii) Actinodaphne speciosa (නික දවුල) (Lauraceae)

Both plants of the Menispermaceae are found in Sri Lanka as well as India while both plants of the Lauraceae are endemic to Sri Lanka.

The roots of C. burmanni, collected near Kandy gave the bisbenzyl-isoquinoline alkaloids, phaeanthine and limacine, while the same plant collected near Kalutara gave tetrandrine, the enantiomer of phaeanthine, indicating that the chemical constituents and hence bioactivity of a plant may depend on its site of collection. The 'non-phenolic' alkaloidal fraction of the plant, consisting of phaeanthine and limacine showed no hypotensive activity, no hemolytic activity and no anti-inflammatory activity. The mass spectral fragmentation of phaeanthine and limacine as well as the ^{13}C NMR spectrum of phaeanthine have been interpreted.

A quaternary alkaloid, palmatine has also been isolated from the roots of C. burmanni collected near Kandy.

The stem of Diploclisia glaucescens gave the arthropod moulting hormone, 20-hydroxyecdysone in the highest yield (3.2%) so far recorded from any natural source. This compound showed both fungicidal and insecticidal activity, but no molluscicidal activity. Other compounds isolated were (i) an unidentified sterol, (ii) two triterpenoid acids of the oleanane series namely, serjanic acid and phytolaccagenic acid, (ii) a bidesmosidic saponin tentatively identified as 3,28-di-O-β-D-glucopyranosylphytolaccagenic acid and (iv) vibo-quercitol. The bidesmodic saponin showed no molluscicidal activity. A mixture of compounds showing the hemolysis and froth tests for saponins was also obtained. This mixture showed molluscicidal activity.

The fungicidal major component of the neutral fraction of the bark of Litsea gardneri has been isolated. The basic fraction gave the aporphine alkaloids, actinodaphnine and laurolitsine.

Three alkaloids have been isolated from the leaves of Actinodaphne speciosa. Two have been identified as the aporphine alkaloids, laurotetanine and N-methyllaurotetanine. The third is most probably the benzylisoquinoline alkaloid. N-methylcoclaurine.

Discussion

(a) (i) Cyclea burmanni is a creeper growing in South India as well as in Sri Lanka. The roots are used in the indigenous system of medicine for treatment of jaundice, stomachache, fever, leprosy and asthma. Indian chemists have isolated tetrandrine from the roots of the plant collected near Trivandrum (1).