E2-14: Chemical and antimicrobial studies on the essential oils of *Kaempferia galanga* Linn.

T A S Perera[1], L S R Arambewela[1], R L C Wijesundera[2]
(*[1]Ceylon Institute of Scientific & Industrial Research, Colombo 7,[2]Dept of Botany, Univ of Colombo, Colombo 3*)

Kaempferia galanga (*Sinh.* Hingurupiyali, Family Zingiberaceae) is widely used in traditional medicine.

The essential oils of cultivated *K. galanga* rhizomes, roots and leaves were analysed. The yields of oil of 1, 1½, and 2 year old rhizomes were 3.4%, 3.8% and 4.7% respectively; the roots and leaves yielded 1-2% and 0.1% respectively. The GC-MS of the local oils indicated the presence of ethyl cinnamate (15-35%), ethyl-p-methoxy cinnamate (30-50%), camphene, 1,8 cineol, borneol, camphor, cinnamaldehyde and previously unreported quinozoline-4-phenyl-3 oxide. This is the first report on constituents of *K. galanga* roots and the Sri Lankan *K. galanga* plant.

The antibacterial activities of the 3 oils studied against *Staphylococcus aureus, Escherichia coli, Pseudomonas aeruginosa* using gentamicin as the standard, indicated that root and rhizome oils were active against *S. aureus* and *E. coli*. The former being more active (MIC - 2 and 8 mg/ml respectively) than the latter (MIC- 42 and 83 mg/ml resp.). Only the antibacterial activity of root was reported earlier.

The antifungal studies of the root and rhizome oils (8 mg) conducted for the first time using *Alternaria* sp. *Colletotrichum* sp. and *Fusarium oxysporum* showed marked activity against all three.

The composition of the rhizome oil of Sri Lankan *K. galanga* appears to be similar to that of Malaysian oil. The high antimicrobial activities of the oil justifies the plant's popularity as medicine. The roots whose higher antibacterial activity may be due to higher contents of borneol or quinozoline derivatives in the oil should be exploited. The antifungal activities indicate the potential value of these oils against plant fungal diseases.