422/D

Comparative study of plant poisoning in 'Kaduru' plants of Sri Lanka with special reference to strychnine

W. D.S.T.Senevirathne and S.P.Senanayake*
Department of Botany, Faculty of Science, University of Kelaniya, Kelaniya

There are six plant species, locally named as 'kaduru', which commonly causes plant poisoning in Sri Lanka. 'Kaduru' fruits have been consumed by humans for committed suicides and according to the clinical observations symptoms due to 'Kaduru' poisoning seem to be similar but occur with different intensities. The field of forensic medicine requires accurate identification of 'kaduru' plants in such poisoning cases and it is also essential to accurately identify these plants in order to treat the patients with correct dose of drugs. The lack of knowledge in, type and concentration of poisonous compound/s present in 'kaduru' seeds and in different parts of the tree also cause confusion in treating these patients.

The objective of the present study was to analyze the poisonous alkaloid compounds in various 'kaduru' plant species with special reference to strychnine. The variation of the distribution of strychnine in parts of the fruits and different stages of the fruits of *Pagiantha dichotoma* (divi kaduru) and *Cerbera odollam* (gon kaduru) were analyzed both quantitatively and qualitatively. Phenetic relationships of six 'kaduru' plant species in families Loganiaceae (*Strychnos nux-vomica, S. minor* and *S. trichocalyx*), Apocynaceae (*Pagiantha dichotoma* and *Cerbera odollam*) and Euphorbiaceae (*Sapium insigne*) were studied using their morphological and alkaloidal variation. From that, leaves of five 'kaduru' plant species were analyzed for their alkaloid composition by using thin layer chromatography. Strychnine and ten unidentified alkaloid compounds (compound 1-9) were detected whereas strychnine was found only from the leaves of *Strychnos nux-vomica* (goda kaduru). Among the ten alkaloids, 'compound 4' was present in four 'kaduru' plant species and others were poorly distributed.

Strychnine was found in comparatively low concentrations in seeds (raw 0.44 mg/g & ripen 0.004 mg/g) and merocarps (raw 0.11 mg/g & ripen 0.05 mg/g) of *Pagiantha dichotoma* and pericarps (raw 0.05 mg/g & ripen 0.008 mg/g) of *Cerbera odollam*. According to the strychnine content in various stages of fruits it was revealed that the quantity of strychnine decreased with ripening of the fruits. Therefore, symptoms of fruit poisoning of *Pagiantha dichotoma* and *Cerbera odollam* could be similar to that of *Strychnos nux-vomica* with low intensities. A conventional key and multi-access key (DELTA- DEscription Language for TAxonomy) were constructed using alkaloids, morphological and anatomical features of all six species for the use of accurate identification of 'kaduru' plants.

Keywords: strychnine, plant poisoning, 'Kaduru' plants.