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**FOUR MEDICINAL PLANTS USED AS 'DANTI' IN AYURVEDIC
MEDICINE IN SRI LANKA: A TAXONOMICAL, ANATOMICAL
AND PHYTOCHEMICAL STUDY**

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ABSTRACT

**FOUR MEDICINAL PLANTS USED AS 'DANTI' IN AYURVEDIC MEDICINE
IN SRI LANKA: A TAXONOMICAL, ANATOMICAL AND PHYTOCHEMICAL
STUDY****A.R.R.Shalika.**

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'Danti' (Sanskrit) or 'Datta' (Sinhala) is a valuable medicinal plant that has many applications in the Ayurvedic medical system. According to 'Bhavaprekasha', one of the basic Ayurvedic books, there are two varieties of 'Danti', known as 'Bruhaddanti' "big-Danti" and *Laghudanti* "small-Danti", and both display similar medicinal properties. In India, the plants *Baliospermum montanum* (Willd.) Muell. Arg. and *Jatropha glandulifera* Roxb. belonging to the family Euphorbiaceae have been recognized as 'Laghudanti' and 'Bruhaddanti', respectively. In Sri Lanka, there is some controversy regarding the identity of 'Danti' and, depending on the area and the school of training of the physician, either *Jatropha gossypifolia* L. or *Boehmeria nivea* (L.) Gaud. is considered as 'Danti'.

When selecting a substitute for a plant this substituted plant to be similar with the original plant in chemical composition. Therefore clarifying the correct botanical source or correct substitute of 'Danti' is important in drug preparation. Studying the roots anatomy and the qualitative comparison of the chemical composition of the roots of different plants species used as 'Danti' in Sri Lanka with those of the roots of 'Danti' from India is helpful to resolve the problem.

A questionnaire on the use and identity of 'Danti' was distributed among 75 among randomly selected traditional medical practitioners, 3 pharmaceutical industries and 9 wholesale drugs -dealers throughout the island. Of the 54 who responded, only 12

practitioners were aware of the use of different species as 'Danti'. All the practitioners however, use *Boehmeria nivea* as 'Danti'. However some practitioners from the Randenigala area in the Central Province were using *Jatropha gossypifolia* as 'Danti'.

The morphological features of the fresh roots of *Baliospermum montanum* from India, *Jatropha gossypifolia* from Randenigala area and *Boehmeria nivea* from Godawela were compared. The transverse sections of the stems and roots of these plants were examined under the microscope for anatomical characters. The results revealed that the three plants examined were substantially different in the size of xylem and phloem vessels, vascular arrangements, and stored substances. Morphology of 'Danti' samples (roots) obtained from Ayurvedic pharmacies and Ayurvedic Hospitals in Sri Lanka were also compared. They were identified as *Boehmeria nivea*.

'Danti' samples (roots) obtained from a pharmacy and a hospital, were separately extracted into methanol, and the methanol extracts were compared with those of the roots of *Baliospermum montanum*, *Jatropha gossypifolia* and *Boehmeria nivea* using Thin Layer Chromatography (TLC). Each methanol extract was partitioned sequentially with hexane and dichloromethane, and the solvent fractions were examined by TLC. *Baliospermum montanum*, *Jatropha gossypifolia* and *Boehmeria nivea* showed different TLC patterns. 'Danti' samples (roots) obtained from the pharmacy, hospital and root of *B. nivea* had similar spots in TLC of the methanol extractions, hexane, and dichloromethane fractions of their methanol extracts. TLC of the methanol extracts, hexane, and dichloromethane fractions of the methanol extracts of the roots of *Baliospermum montanum* and *Jatropha gossypifolia* showed similar spots and there were whole aqueous methanol fractions had similar spots.

The present study revealed that the three plants, *Baliospermum montanum*, *Jatropha gossypifolia* and *Boehmeria nivea* are morphologically different, but *Baliospermum montanum* and *Jatropha gossypifolia* are similar with several chemical compounds, and that 'Danti' used in Sri Lanka is predominantly *Boehmeria nivea*.