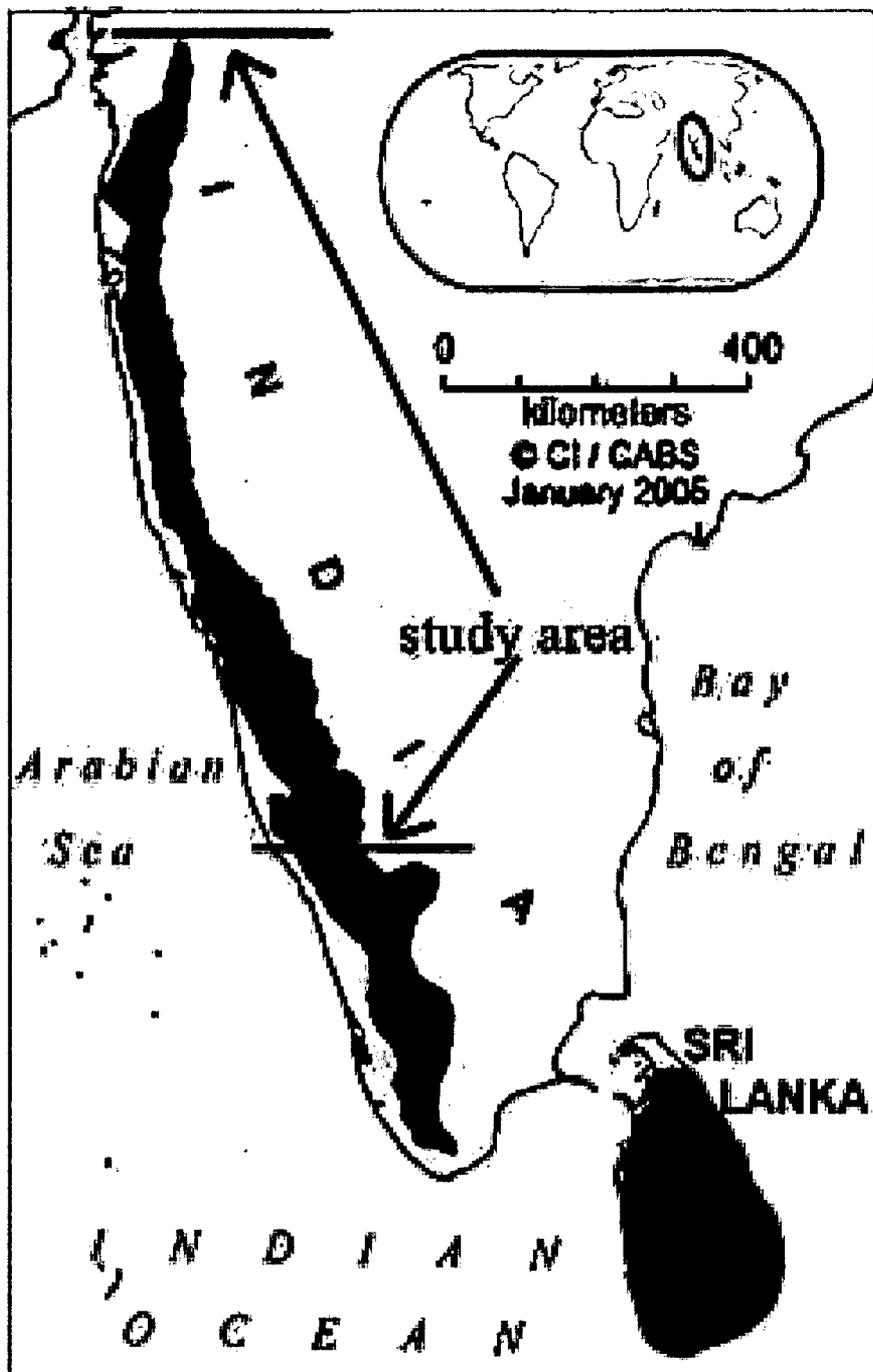


INTRODUCTION

The Family Acanthaceae consists of 250 genera and about 2500 species and represents about 1% of the living angiosperm species described (Scotland, 1992). The family is distributed extensively in tropical and subtropical parts of Africa, Australia, Madagascar, South America, Pacific islands and the Indo-Malayan regions, however occurrences are seen in Iran, Arabia, parts of Central Asia (Chaubal, 1966). The four chief centres of distribution are: Indo-Malaysia (*Strobilanthes* and *Andrographideae*); Africa (*Barleria*); Brazil (*Ruellia*) and Central America (*Aphlendraea* and *Odontonema*) (Ahmedullah & Nayar, 1986).

Family Acanthaceae ranks eighth among the 17 families with high representation of more than 150 species of endemics in India. It has 380 taxa in India, of which 224 are endemic with 58.9% endemism. It is also third among the six families having high degree of endemism in Peninsular India, with a total number of 146 endemic taxa and the percentage of endemism is 38.6% (Nayar, 1996). Acanthaceae is one of the leading family with high number of endemic genera and species in the Western Ghats (Punekar & Kumaran, 2005). The following 10 genera of Acanthaceae are considered endemic to Peninsular India: *Carvia* Bremek., *Gantelbua* Bremek., *Kanjaram* Ramam., *Nilgirianthus* Bremek., *Phlebophyllum* Nees, *Pleocaulus* Bremek., *Santapaua* Balakr. & Subram., *Supushpa* Suryan., *Taeniandra* Bremek. and *Xenacanthus* Bremek. (Nayar, 1996). However some of them are now considered congeneric and have become synonyms. From the literature, it is estimated that there are 67 species belonging to 27 genera spread over Maharashtra, Goa and Karnataka that are endemic to Western Ghats. This shows that the Northern and Central Western Ghats are very rich in endemic species of Acanthaceae (Map 1).



Map 1: Western Ghats of India

Although the family is not noted for its economic importance, Burkill (1985) listed 103 species from West Tropical Africa as “useful plants”. They serve as a substantial floristic element in many regions at high altitudes and form breadth taking gregarious formations when in bloom. Several of the wild Acanthaceae can be brought into cultivation for their beautiful flowers.

Endemism and Phytogeography

Endemism is when a taxonomic unit is found restricted to an area and the reservoir of genepool specific to this group is limited, hence the chances of its adaptation and survival are also limited. The endemic floristic elements of a country or a geographical region enlightens on the biogeography of an area, centres of speciation, areas of extinction, vicariance and adaptive evolution of the flora found in the area. India harbours a rich flora with a fairly high degree of endemism, because of its varied physiography and climate. The Western Ghats are rich in endemics and its summits are like islands as far as endemic species distribution is concerned. The concept of endemism and endemic taxa distribution has received fresh attention because of taxonomic revisions and new discoveries (Ahmedullah & Nayar, 1986).

India with 2.64% of land area and 6.8% of flowering plants is recognized as one of the 17 mega diversity countries of the world, shares four hotspots out of the world's 34 hotspots with the neighbouring countries. The Eastern Himalayas and the Western Ghats are considered important among them. The population pressure however, has a negative effect resulting in the rapid rate of extinction of endemic flora (Nayar, 1996). The flora of India being derived from the original Gondwanaland, is a Paleotropic flora (Ahmedullah & Nayar, 1986). India has about 17,527 species (Karthikeyan, 2009), which represents about 7% of all known flowering plants of the world, of which about 5,725 are endemic species, thus

showing a high degree of endemism (32.7%). The three mega-centres of endemic plants in India are: Eastern Himalaya (1,808 endemic species), Western Ghats (1,500 endemic species) and Western Himalaya (1,195 endemic species) (Nayar, 1996).

Peninsular India has no endemic families, but about 58 endemic genera are found to be present, of which 47 are monotypic (Ahmedullah & Nayar, 1986). Most of them are confined to the Western Ghats and 49 among them are considered endemic to the Western Ghats (Nayar, 1980).

Twenty five micro-centres of endemism have been recognized in Indian subcontinent (Nayar, 1996). Four of them viz. Kodagu, Shimoga-Kanara, Maharashtra-Khandala Ranges and Konkan-Raigad from the Western Ghats form part of the present study area and possess some of the endemic Acanthaceae.

Gaps in the area of study

Though there are general studies on the Western Ghats, such as “Acanthaceae of Bombay” (Santapau, 1952; 1953), critical studies including re-evaluation of taxonomic circumscription of endemic species were not carried out. *Strobilanthes* Blume as defined by Anderson (1867), Bentham (1876), Clarke (1884-1885) and Lindau (1895) poses difficulty in its delimitation, due to the close resemblances between some of its constituent species (Bremekamp, 1944). The existence of gap is justified by the publication of new species from the Western Ghats region (Thothathri, 1965; Ramamurthy, 1971; Raghavan & Singh, 1984; Pradeep & Sivarajan, 1991; Madhusoodanan & Singh, 1992; Wood, 1994; Scotland, 1998; Santosh Kumar & Vikraman, 2001; Remadevi & Binoj Kumar, 2001a-f; Mohanan *et al.*, 2002; Santhosh Kumar *et al.*, 2002; Almeida, 2003; Das & Singh, 2006) in the past few decades. Though there is a recent work on taxonomy of *Strobilanthes* (Venu, 2006), the threat status, phytogeography and phylogeny of the endemic genera of Acanthaceae were

not worked out. Hence, the present study has been undertaken with the following objective.

OBJECTIVES

To critically study and evaluate the taxonomic circumscription of endemic species of Acanthaceae of Northern and parts of Central Western Ghats and also to interpret their phytogeography and phylogeny.