Chapter 3

REVIEW OF EARLIER WORKS

3.1. Introduction

A brief review of literature with special reference to earlier works on floristics, floristic linkage between India to Sri Lanka and ethnobotanical studies is presented below under appropriate heads.

3.2. Review of floristic studies

The oldest literary record about plant species in India is found in the ancient Sanskrit literature viz., *Rig Veda* and other three *Vedas* dating from around 3000 BC. The great Rishi, *Valmiki* recorded the uses of medicinal plants in his epic *Ramayana*. The excavations made in the Indus Valley have revealed indications regarding the uses of medicinal plants like Black pepper, Cinnamon, Turmeric and Cardamom. The medicinal properties of plants have also been mentioned in the writings of *Susrutha* dating back to 500 BC. There are innumerable citations by Hiuen Tsang (629 AD), Masudi of Baghdad (890-956 AD), Abul Feda (1273-1331 AD) about the plant wealth of India. Marco Polo (1298 AD) mentioned about ginger plant (*Quilon Ginger*) that was cultivated in Malabar (MALHOTRA, 2000). The European countries particularly Spain, UK, and Portugal showed keen interest in the plant wealth of India, especially from southern part of Western Ghats. Coloquis dos Simples (a checklist of medicinal plants of India) written by *GARCIA DE ORTA* (1565) is considered as the first published Botanical work on the plants of Western Ghats. Realizing the importance of spices and medicinal plants of Malabar region, *HENDRICH ADRIAN VAN RHEEDE* (1636-1691), the then Dutch admiral of Malabar, took special interest to collect and document the plant wealth of Malabar area. He took strenuous effort to document the indigenous uses of plants with the help of local traditional vaidyans viz., Itti Achuthen, Appu Bhat, Ranga Bhat and Vinayaka Panditt. A detailed descriptions of 781 plants species with sketches, habit, habitat, medicinal and other uses were published in 12 volumes during 1678-1693.

*Icones Plantarum Indiae Orientalis* published in six volumes during the period 1838-1853, *Illustrations of Indian Botany* published in the year 1840 and the work in collaboration with *WALKER-ARNOTT* (1834) viz., *Prodromus Florae Peninsulæ Indiae*.
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Orientalis are some important classical works on the flora of Peninsular India by Wight (1838-1853, 1840, 1834). The classical works of Beddome (1868-74, 1869-74) on angiosperm flora of India are: ‘Icons Plantarum Indiae Orientalis’ published during the period 1868-1874 and ‘The Flora Sylvatica for Southern India’ during the period 1869-1874. The work of Roxburgh (1820, 1824), Flora Indica was a landmark towards the compilation of the flora of India. The seven volume work, ‘The Flora of British India’ by Hooker (1872-1897) dealt with the flora of erstwhile British India. It is followed by ‘The Flora of the Presidency of Bombay’ by Cooke (1901-1908) and ‘The Flora of the Presidency of Madras’ by Gamble (1915-1936). The work of Gamble (1915-1936) is considered as the best among the regional floras. Meanwhile, the first comprehensive work on 582 indigenous trees of Travancore entitled The Forest Trees of Travancore, was published by Bourdillon (1908). Subsequent floristic works were done by Rao (1914), Lushington (1915), Fischer (1921) and Fyson(1932). The works of Burkil (1965) entitled ‘The Chapters on the History of Botany in India’ and that of Joseph (1977) on ‘Floristic studies in India-with special reference to Southern Circle of Botanical Survey of India’ are the compilation of the contributions of various botanists. Many studies were undertaken on the regional floras by the initiative of Botanical Survey of India primarily with the objective of preparing a complete and comprehensive flora of India. The Flora of Tamil Nadu, India. Vol. I-III (Nair & Henry, 1983; Henry et al., 1987, 1989) were published as part of aforementioned project. Subsequent works on regional floras of Kerala either completed or being completed are: Floristic studies of Idukki District (Vivekananthan, 1981); The Flora of Calicut (Manilal & Sivarajan, 1982); Flora of Quilon District (Mohanan, 1984); Studies on the Flora of Kasaragod Division, Cannanore District (Ansari, 1985); Flora of Palghat (Subramanian et al., 1987); Flora of Silent Valley (Manilal, 1988); Flora of Cannanore (Ramachandran & Nair, 1988); Flora of Kottayam District ( Antony, 1989); Flora of Malappuram District excluding Nilambur Forests (Babu, 1990); Flora of Palghat (Vajrevelu, 1990); Observations on the Aquatic Angiosperms of Malabar (Joseph, 1991); Flora of Pathanamthitta District (Anil Kumar, 1993); Flora of Thruvananthapuram (Mohanan & Henry, 1994); Flora of Thenmala Forest Division (Subramaniyan, 1995); Flowering Plants of Thrissur Forests (Sasidharan & Sivarajan, 1996); Flora of Nilambur (Sivarajan & Mathew, 1996); Shenduruny Wildlife Sanctuary (Sasidharan, 1997); Epiphytic Flora in the Tropical Ecosystem of Western Ghats (Muktesh, 1998); Periyar Tiger Reserve (Sasidharan, 1998); Chinnar
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Wildlife Sanctuary (SASIDHARAN, 1999); Floristic Studies in Vellarimala (PRADEEP, 2000); Studies on Flowering Plants Diversity of Alappuzha District, Kerala (Sunil & Sivadasan, 2000), The flora of protected areas such as Agasthyamala (MOHANAN & SIVADASAN, 2002); Parambikulam Wildlife Sanctuary (SASIDHARAN, 2002); Flowering Plants of Kerala (SASIDHARAN, 2004); Floristic Study of Wayanad District with special emphasis on conservation of rare and threatened Flowering Plants (NARAYANAN, 2009); Riverine flora of Pamba River Basin (GEORGE, 2013) and Flowering plants of Kerala (SASIDHARAN, 2013).

Endemic taxa are essentially restricted to a specified geographical area. Tropical forests show a high degree of species richness and endemism (ORIANS & GROOM, 2005). Endemic plant species in India has been estimated as 33% with ca. 140 endemic genera but no endemic families (SHEEBA & NARASIMHAN, 2013.). Out of 150 important botanical sites identified for conservation action by the World Conservation Monitoring Center (WCMC), five locations are in India including the Western Ghats (IUCN, 1987). The high percentage of endemism in the Western Ghats resembles oceanic islands (SUBRAMANYAM & NAYAR, 1974). The species richness in the Western Ghats is due to varied latitudinal and altitudinal gradients with varied rainfall and temperature. These geographical peculiarities also favour a high degree of endemism. As NAYAR (1996) rightly point out endemic species in peninsular region are paleoendemics that are found in hills of Peninsular India. Rarity is also considered as another natural phenomenon that arises by physical, chemical, biological and anthropogenic intrusions. Many studies were done by earlier researchers to assess the rare and endemic angiosperms (COOKE, 1901 – 1908; CHATTERJEE, 1940; WHERRY, 1944; HENRY et al., 1978; RAO, 1972, 1979; JAIN & SASTRY, 1980, 1982, 1984; NAYAR, 1980, 1982; BHASKAR, 1981; ABRAHAM & MEHROTRA, 1982; AHMEDULLAH & NAYAR, 1987; NAYAR & SASTRY, 1987, 1988, 1990; VAJRAVELU, 1987, 1988; BINOJKUMAR & BALAKRISHNAN, 1991; RAMESH et al., 1991; BHATTACHARYYA & KUMAR, 1992; SARKAR, 1995; NAYAR, 1996; RAMESH & PASCAL, 1997; AHMEDULLAH, 2000; GOPALAN & HENRY, 2000; SASIDHARAN, 2004; JOSHI & JANARTHANAM, 2004; NAYAR et al., 2006; KRISHNAN & DAVIDAR, 2007; MITRA & MUKHERJEE, 2007; RAMACHANDRAN et al., 2010. In a recent investigation, SASIDHARAN (2013) documented 5091 taxa of flowering plants from Kerala of which 1709 are listed under endemic category and 493 under rare and endangered category.
3.3. Studies on floristic linkage between India and Sri Lanka

The Western Ghats of India and Sri Lanka biodiversity hotspot are often regarded as one unit because of shared biogeographical history (Nihara et al., 2007). Proposals on centres of origin (Vavilov, 1926) and Gondwana breakage (Grantham, 2003) give much insight to the origin and distribution of plant species. Studies were conducted by earlier researchers on floristic linkage between India and Sri Lanka (Willis, 1922; Van, 1962; Wild, 1965; Takhtajan, 1969; Raven & Axelrod, 1974; Schoener, 1987; Sacks, 1997; Rajesh et al., 1998; Puyraudeau, 2003; Guru & Chetty 2006). However, evidences from Achankovil shear zone of Western Ghats were not subjected to detailed investigation to prove the biological linkage between India and Sri Lanka.

3.4. Review of ethnobotanical studies

In AD 77, Dioscorides documented 600 useful plants of Mediterranean in his classical work ‘De Materia Medica’ (Choudhary et al., 2008). In the 18th century, Carolus Linnaeus, the Swedish biologist, who invented the modern system of botanical classification, travelled to Saamiland to study the Saami people. He lived with the people as a member of their tribe, wearing their clothes, sharing their food, and studying the plants they used. In the 19th century, British explorer and ethnobotanist Richard Spruce spent 17 years in the Amazon and Andes regions of South America. He discovered hundreds of new plant species and conducted important research on plants used as hallucinogens for religious purposes by Amazonian tribes. Spruce also collected specimens of the cinchona tree that were later used to establish quinine plantations in Southeast Asia. Richard Evans Schultes was an authority on useful plants viz., coca, palms and orchids. Since 1930 Schultes has conducted research among native American tribes in North, Central, and South America. His studies of the mushroom used by the Mazatec peoples of southern Mexico led to the development of the heart drug Visken (Schultes, 1976). As Sinha (1996) point out, there are many records of ethnobotanical uses of plants from Indian subcontinent such as for worship, medicine, food, fuel and for agriculture as mentioned in ancient Indian literature/religious texts viz., Rigveda, Atharvaveda, Upanishads, Mahabharata, Puranas, Charakasamhitha (100 AD), Sushrutaasamhitha (100-800 AD) and Dwanwanthari Nighanthu (1200 AD). Catalogue of Indian Medicinal Plants and Drugs (Fleming, 1810); Indigenous Drugs of India (Chopra, 1933); Indian Materia Medica
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Floristic and Ethnobotanical Studies of Achankovil Forests (NADKARNI, 1955); Glossary of Indian Medicinal Plants (NAYAR et al., 1956); Glimpses of Indian Ethnobotany (JAIN, 1981); Bibliography of Ethnobotany (JAIN, 1984); A Manual of Ethnobotany (JAIN, 1987); Ethnobotany in South Asia (MAHESWARI, 1996); Contribution to Indian Ethnobotany (JAIN, 1997); Ethno-Medico-Botany of the Southern Western Ghats of India (HENRY et al., 1996); Indian Folk Medicines and other Plant-Based Products (SINGH, 2007) have laid milestones in Indian Ethnobotany.

Ethnobotanical studies on the indigenous tribes with special reference to southern Western Ghats were reported by RAMACHANDRAN & NAIR (1981); PUSHPANGADAN & ATAL (1984); BINU et al. (1992, 2011); SIVARAJAN & BALACHANDRAN (1994); RADHAKRISHNAN et al. (1996); SAJEEV & SASIDHARAN (1997); JERY & JOHN (1999); NAYAR et al. (1999); BALAKRISHNAN et al. (2003); NADANKUNJIDAM (2003); AYYANAR & IGAMCIMUTHU (2005, 2013); MURALEEDHARAN & SASIDHARAN (2005); RAMACHANDRAN & VIJAYAN (2006); JOHNY & FRANCIS, 2007a, 2007b; RAMACHANDRAN (2007); YESODHARAN & SUJANA (2007); RASINGAM & REHEL (2009); RAJITH & RAMACHANDRAN (2010); BINU (2010); AMUTHAVALLUVAN, 2011; NARAYANAN et al. (2011); SASI et al. (2011); AJESH et al. (2012a, 2012b); DIANA (2013); VARGHESE et al. (2013); DAVID (2014); XAVIOR et al. (2014).

Malampandaram forms 6% of the total tribal population of Kerala (ANONYMOUS, 1981). A few studies on the anthropological aspects of Malampandarams were attempted by earlier researchers (THURSTON, 1909; KRISHNA, 1937; VON, 1960, 1985; SUDHIBHUSHAN, 1976; BRIAN, 1977, 1982, 1991; SINGH, 1994). In a preliminary study entitled ‘Ethnomedicine of Malampandaram tribes of Achenkovil forests, Kollam district, Kerala’ conducted by UDAYAN et al. (2007), the importance of detailed investigation on ethnobotany of this tribe was stressed. The present study is a humble attempt in the above context.

3.5. Summary

Many studies on plant diversity and ethnobotany have been undertaken by earlier researchers. A perusal of these literature revealed that no indepth studies on floristics and ethnobotany were conducted with special reference to Achankovil Forest Division. It is expected that the present floristic investigation in the Achankovil shear zone (AKSZ) will provide additional evidence to explain the migration of peninsular Indian endemics to Sri Lanka.