



## CHAPTER I

### INTRODUCTION

Plants in the genus *Stephania* Lour. belong to the Family Menispermaceae (Hooker and Jackson, 1885). Most of them are found in tropical regions of the Old World, chiefly in Africa, China and Malayan Islands (Hooker, 1973; Kirtikar and Basu, 1980).

The genus *Stephania* was originally described by Loureiro (in 1790) in his *Flora Cochinchinensis*, with two species, *Stephania rotunda* Lour. and *S. longa* Lour. (Forman, 1956). According to the *Index Kewensis*, the 89 species of this genus are shown below :-

- Stephania abyssinica* Walp.
- S. aculeata* F.M. Bailey
- S. acuminata* Spreng.
- S. acuminatissima* Walp.
- S. africana* Kuntze
- S. andamanica* Diels
- S. appendiculata* Miers
- S. australis* A. Gray
- S. australis* Miers (*Cissampelos pareira* Linn.)
- S. baucroftii* F.M. Bailey
- S. borneensis* Yamamoto
- S. brachyandra* Diels
- S. brevipes* Craib
- S. bullulata* Miers

- Stephania burmannii* Walp.  
*S. cambodica* Gagnep.  
*S. capitata* Spreng.  
*S. catosepala* Diels  
*S. cauliflora* Becc.  
*S. cephalantha* Hayata (*S. cepharantha* Hayata-Formosa)  
*S. cincinnans* K. Schum.  
*S. concinna* Miers  
*S. convolvulacea* Miers (*Cissampelos pareira* Linn.)  
*S. corymbosa* Walp.  
*S. cyanantha* Welw. ex. Hiem.  
*S. delavayi* Diels  
*S. dictyoneura* Diels  
*S. dielsiana* Wu  
*S. dinklagei* Diels  
*S. disciflora* Hand.  
*S. discolor* Spreng.  
*S. dolichopoda* Diels  
*S. elegans* Hook.f. et Thoms.  
*S. erecta* Craib  
*S. exigua* Miers  
*S. fastuosa* Miers  
*S. florulenta* Becc.  
*S. forsteri* A. Gray  
*S. glabra* (Roxb.) Miers  
*S. glandulifera* Miers  
*S. glaucescens* Walp.

*Stephania gracilentata* Miers

*S. graciliflora* Yamamoto

*S. grandiflora* Forman

*S. hallieri* Diels

*S. herbacea* Gagnep.

*S. hernandifolia* Walp.

*S. hexandra* Miers

*S. hispidula* Yamamoto

*S. hypoglauca* Miers

*S. intertextata* Miers

*S. japonica* (Thunb.) Miers

*S. kerrii* Craib

*S. laetificata* Oliver.

*S. laetificata* (Miers) Benth.

*S. laevigata* Miers

*S. latifolia* Miers

*S. longa* Lour.

*S. longifolia* Becc.

*S. merrillii* Diels

*S. meyeriana* Harv.

*S. mildbraedii* Diels

*S. moluccana* Forman

*S. montana* Diels

*S. oblata* Craib

*S. obvia* Miers

*S. pallidula* Miers

*S. papillosa* Craib

*S. pierreii* Diels

*S. praelata* Miers

*Stephania prapatensis* Yamamoto  
*S. psilophylla* (Presl) Forman  
*S. racemosa* Turcz.  
*S. ramosii* Merrill  
*S. ramuliflora* Miers  
*S. reticulata* Forman  
*S. rotunda* Lour.  
*S. rotundata* Miq.  
*S. roxburghiana* Miers  
*S. salomonum* Diels  
*S. sasakii* Hayata ex Yamamoto  
*S. schimperi* Hochst. ex A. Rich.  
*S. sinica* Diels  
*S. tetrandra* S. Moore  
*S. tomentosa* Spreng.  
*S. truncata* Yamamoto  
*S. venosa* Spreng.  
*S. wightii* Dunn.  
*S. zippeliana* Miq.

(Hooker and Jackson, 1885; Duran and Jackson, 1901-1905; Thiselton Dyer, 1904; Prain, 1913, 1921; Hill, 1926, 1929, 1933, 1938; Hill and Salisbury, 1947; Salisbury, 1955; Taylor, 1958, 1965; Harrison, 1974)

Furthermore, not only in Index Kewensis but in many journals, there are other *Stephania* species such as :

*Stephania brachyandra* Diels  
*S. dicentrinifera* H.S. Lo et M. Yang  
*S. epigeae*  
*S. intermedia*  
*S. kwangsiensis* H.S. Lo

*Stephania mashanica*

*S. micrantha*

*S. suberosa* Forman

*S. viridiflavens*

(Huang and Chen, 1979; Fang *et al.*, 1981; Min *et al.*, 1981, Chen *et al.*, 1981, 1982; Wang and Wei, 1983; Min and Zheng, 1984; Chen *et al.*, 1985; Patra *et al.*, unpublished at this time).

According to the Thai Plant Names of the Royal Forest Department, there are only eight species of *Stephania* in Thailand (Smitinand, 1980) as follows.

*Stephania brevipes* Craib, บัวเครือ Bua Khruea (Phetchabun)

*S. erecta* Craib, บัวก้อ Bua Kue (Phetchabun, Chiang Mai),  
บัวบก Bua bok (Kanchanaburi)

*S. glabra* Miers, พังนัง Phanang nang (Chiang Mai)

*S. hernandifolia* Walp., กนปัด, ไบกนปัด Konpit, Bai konpit  
(General), ปังปอน Pangpon (Chiang Mai)

*S. japonica* Miers, ยานปด Yaan pot (Nakhon Si Thammarat)

*S. pierrei* Diels, บัวบก Bua bok, สับเลียด Sabuu leuat  
บอระเพ็ดพุงช้าง Boraphet phungchaang (Ratchaburi), บัวเครือ Bua Khruea  
(Phetchabun), เปลาเลียดเครือ Plao leuat Khruea (Northern).

*S. reticulate* Forman, ต้มเตา Taptao (Pattani)

*S. rotunda* Lour. = *S. pierrei* Diels

Forman (1956) had revised the *Stephania* species of the region Malaysia. The valid and synonymous names of some species should be as follows.

*Stephania japonica* (Thunb.) Miers var. *discolor* (Miq.) Forman

= syn. *S. hernandifolia* Walp.

*S. japonica* (Thunb.) Miers var. *japonica* (Forman)

= syn. *S. japonica* Miers

*S. pierrei* Diels = syn. *S. erecta* Craib

*S. venosa* Spreng. = syn. *S. rotunda* Lour.

*Stephania glabra* (Roxb.) Miers is a glabrous, dextrous

climber with smooth terete stems attaining a length up to 7 m., found in the Himalayas and Assam and in the western Ghats up to the Nilgiris and Tirunelveli hills, ascending to an altitude of 2,100 m. Roots tuberous; leaves herbaceous membranous, glabrous on both sides, pale glaucescent below, broadly ovate or suborbicular, at the base rotund, 4-12 cm. broad, primary nerves about 5; petiole 3-15 cm. long, slender. Male inflorescence axillary or on leafless branchlets arising by the side of minute bracts. Peduncle 4-8 cm. long, rays of umbels often 6, very slender. Flowers on filiform 2-4 mm. long, pedicels narrowly obconic. Sepals : 3 outer ones linear-oblong, 2-2.5 mm. long, scarcely 0.5 mm. broad, 3 inner ones obspatulate, 2-2.8 by 0.5-0.7 mm. Petals 3, stouter, obspatulate, at the apex sometimes 3-lobulate, biglandular above the middle, 1.8 mm. long and broad. Synandrium 1.5-2 mm. long. Fruiting umbels with rays 1.5 cm long, pedicels 0.6-0.8 cm. long. Drupes obovate, compressed; endocarp with 20-25 transverse ribs running from the dorsal line (Kirtikar & Basu, 1980; Publication and Information Directorate, 1976).

Several species of *Stephania* were reported to be used as medicinal plants in many countries mostly in Asia. In Taiwan, the

tuberous root of *Stephania cepharantha* Hayata is used as a remedy for tuberculosis and epilepsy. The alkaloid cepharanthine is reported to be very effective for treating the germ of tuberculosis in various parts of the body, and also leprosy and pertussis; in the latter a single strong dose is claimed to be a cure. The report further points out the low toxicity of this alkaloid. Cepharanthine was first isolated by Kondo and his co-workers in 1934. *Stephania sasakii* Hayata also contains cepharanthine (Perry, 1980).

The tubers of *Stephania glabra* (Roxb.) Miers are employed like the tubers of *Stephania rotunda* Lour. in the treatment of pulmonary tuberculosis, asthma and intestinal complaints. They also possess hypoglycaemia activity (Publication and Information Directorate, 1976). In Thailand, the people use both *S. glabra* (Roxb.) Miers and *S. suberosa* Forman as emmenagogue and expectorant (Pongboonrod, 1950).

*Stephania japonica* (Thunb.) Miers var. *discolor* (Miq.) Forman [*S. hernandifolia* (Willd.) Walp.], the bitter roots are used as the component of a many good Ayurveda preparation and as a substitute of *Cissampelos pareira* Linn. It is regarded as bitter, astringent, easily digestible and useful in fever, diarrhoea, urinary diseases and dyspepsia (Kirtikar & Basu, 1980).

*Stephania japonica* (Thunb.) Miers var. *japonica* Forman [*S. japonica* (Thunb.) Miers] is found ranging from India to South China and South East Asia. In Japan and Taiwan, a decoction of the stem and root is prescribed for malarial fever and also as a tonic for people in poor health. The Chinese in Indonesia use the roots to treat stomachache and a feeling of oppression or tightness. The leaves



crushed in water give a jelly like mass which may be applied to affections of the breast or taken internally. The plant was reported to contain  $\beta$ -sitosterol, epistephanine, homostephanoline, isotrilobine, metastephanine, protostephanine, pseudoepistephanine, stephanine, stephanoline (Perry, 1980).

*Stephania pierrei* Diels (*S. erecta* Craib), the tuber is used by natives in Thailand as expectorant (Pongboonrod, 1955).

*Stephania salomona* Diels (perhaps, *S. zippeliana* Miq.) is used by the natives in Solomon Islands, by rubbing the leaves on the skin to allay pain (Perry, 1980).

*Stephania suberosa* Forman, in Thailand, the natives use the vines as carminative, the leaves as stomachic, the flowers as antileprosy and the tubers as emmenagogue and expectorant (Pongboonrod, 1950).

*Stephania tetrandra* S. Moore is found in Chekiang and along the coast to Kwangtung. It is used medicinally in West China. A decoction of the roots and/or leaves is taken to treat neuralgia, acute arthritis, poisonous snake bites and stomach ulcers (Perry, 1980).

*Stephania venosa* (Bl.) Spreng. (*S. rotunda* Lour.), the bitter tubers are prescribed as a remedy in treating pulmonary consumption, asthma, dysentery and fever. Women also use the drug as a depurative after childbirth and treat abdominal ills. The alkaloid rotundine appears to have antispasmodic, sedative, cardiotonic properties and regulative action on respiration. The antispasmodic action acts



especially on the gastro-intestinal tract (Perry, 1980).

The tubers of *S. glabra* (Roxb.) Miers are a rich source of several alkaloids. Tubers from the Caucasus region are reported to contain 6.0-7.5 percent of total alkaloid (Publication & Information Directorate, 1976). The alkaloids reported by various investigators as present in the tubers, leaves and stems are in isoquinoline group.

It is known that plants of the same species may show a wide variation in their chemical content(s) due to many factors such as genetic factors, climate, soil, location, rainfall, light exposure and its maturity. These ecological factors and the interest in the indigenous plants of Thailand stimulated a re-appraisal of the chemical compounds, especially alkaloids, present in the plant.



ศูนย์วิทยทรัพยากร  
จุฬาลงกรณ์มหาวิทยาลัย