



CHAPTER I

INTRODUCTION

Gelsemium elegans Benth. is a climber, known in Thai as " Mali saikai doklueang (มะลิไล่ไก่คอกเหลือง)", found in Phuu-Luang National Park, Loei, Thailand. The genus belongs to the tribe Gelsemieae of the family Loganiaceae (Kisakürek, Leeuwenberg and Hesse, 1983).

In the Loganiaceae, only two tribes contain indole alkaloids with a C₉-or C₁₀-monoterpene moiety, namely, Gelsemieae and Strychnaeae (Kisakürek *et al.*, 1983). In the Gelsemieae there are two genera: *Gelsemium*, which comprises 3 species in Asia and America, and *Mostuea*, which consists of 8 species-one in northern South America and the rest in tropical Africa. Alkaloids are present in both genera. Two of the three genera in the tribe Strychnaeae contain considerable amounts of alkaloids, i.e. *Gardneria* and *Strychnos*. In another member of the tribe, *Neubergia*, only traces of alkaloids were observed. *Gardneria* consists of 5-6 species occurring from India to central Japan. *Strychnos* is the biggest alkaloid-bearing genus of the family, comprises 185-190 species in Asia, Australia, Africa and Central and South America. About 200 alkaloids have been isolated from this genus (Bisset, 1980). Most of the alkaloids are of specific structures and particular to the genus.

The genus *Gelsemium* consists of 3 species as follows (Ornduff, 1970):-

1. *Gelsemium sempervirens* (L.) Jaume St.-Hilaire
2. *G. rankinii* Small
3. *G. elegans* Benth.

Gelsemium sempervirens (L.) Jaume St.-Hilaire is one of the most beautiful native plants of North America. It is a perennial woody twinner occurring in rich, moist soils, by the sides of streams, along the seacoast from Virginia to the south of Florida, extending into Mexico (Grieve, 1975). It has been used in medicine for its antispasmodic and analgesic properties (Schun and Cordell, 1985 b). In antispasmodic properties it has been recommended and found useful in the treatment of spasmodic disorders, such as asthma and whooping cough, spasmodic croup and other conditions depending upon localized muscular spasm. In convulsions, its effects have been very satisfactory (Grieve, 1975).

It is, at present, mainly used in the treatment of neuralgic pains, especially those involving the facial nerves, particularly when arising from decaying teeth.

G. rankinii Small is found at low elevations, climbing on fences, low bushes, and trees, or prostrate on the ground. It distributes in wet woodlands or swamps of the coastal plains of southern Georgia, northern Florida, southern Mississippi, southeastern Louisiana and is found comparatively rare in North Carolina (Ornduff, 1970). Information on biological properties has not yet been reported.

G. elegans Benth. is a climber found in Assam, northern

Burma, northern Thailand, Laos, Viet Nam, southern and southeastern China, Sumatra, and northern Borneo (Ornduff, 1970). It has also been found in northeastern Thailand. The flowers of this species are bright yellow and are borne in terminal compound trichotomous cymes. This climber bears a remarkable superficial resemblance to climbing species of *Jasminum* so much that this mistake has been made even by experienced botanists. However, the distinct difference is that the stamens of this genus are five, while those of *Jasminum* are two (Bor, 1953). All parts of this plant are very poisonous and it has been used in China, Viet Nam, and Borneo as a suicidal poison which is either ingested or smoked. It is also stated to be used as a fish poison in Burma (Ornduff, 1970). It is used externally on boils, ulcers, ringworm, and leprosy, or sometimes used to treat neuralgic pain. The therapeutic and toxic doses are so closed that extreme caution is needed in administering the drug (Perry, 1980).

The differences between *G. sempervirens* (L.) Jaume St.-Hilaire and *G. rankinii* Small are that seeds of the former have unilateral wing and flowers usually strongly scented but those of the latter are wingless and flowers usually odorless. The third species, *G. elegans* Benth., is different from the above two species on the points that the capsules are inflated, seeds surrounded by an inciso-dentate wing and flowers odorless (Ornduff, 1970).