



CHAPTER I

INTRODUCTION

Ancistrocladus, Wall., the only genus in the *Ancistrocladaceae*, (Hutchinson, 1959; Willis, 1973) is a genus of woody climbing shrubs (often erect in youth) with short supra-axillary often arrested and circinate hooked branches, (The Wealth of India, 1948; Hooker, 1897) formerly regarded as peculiar members of the family Dipterocarpaceae (Burkill, 1935). They are found in West Tropical Africa, Tropical Asia and the Indian Archipelago (Hutchinson, 1959) (Fig. 1).

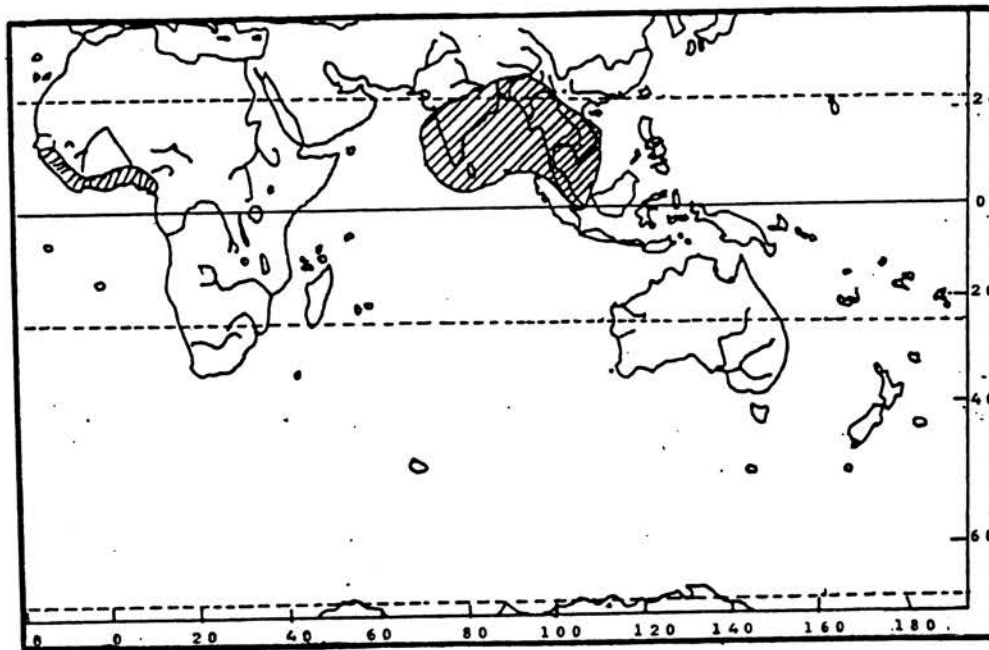



Figure 1.  Distribution of *Ancistrocladus* Wall.

(from The Families of Flowering Plants. Vol. I, 1959, pp. 287)

According to the Index Kewensis and its supplement, the genus comprise 21 species.

Ancistrocladus tectorius (Lour.) Merr. is known in various local names in Thailand as Kra-maa กระม่า (Khmer-Saraburi); Khun-maa ขุนมา (Khmer-Surin); Khon tee-maa ค้อนตีหมา (Yala); Khon maa khaao ค้อนหมาขาว (Central); Khon maa daeng ค้อนหมาแดง (Nakhon Ratchasima); Khansong คันทรง, Thong khansong ทองคันทรง (Chon Buri); Khon ma-den โคมะเด้น (Suphan Buri); Sin-ta-kophlee ซินตะโกพลี (Karen-Lampang); Phan song พันทรง (Trat); Yuu-long ยูลอง (Malay-Narathiwat); Li-daa-saa-pee ลิดาซาปี (Malay-Peninsular); Lin kwaang ลิ่นควาง, Lin khwaai ลิ่นควาย (Lampang); Haang kwaang หางควาง (Nakhon Phanom); Huu kluuang หุกหลวง (Prachin Buri) the later name is probably named Huu kkuang หุกวง (Smitinand, 1980; Na Songkla, 1976),

In Thailand, this plant is widely distributed in evergreen forest (Fig. 2). The *Ancistrocladus* found in Thailand are the species of *A. cochinchinensis* Gagnep., *A. extensus* Wall. ex Planch., *A. griffithii* Planch., *A. tectorius* Merr. and *A. wallichii* Planch., all of which are said to be the same species (Durand, 1906). At present *A. tectorius* is an accepted name (Smitinand, 1980).

Steenis *et al.* (1948) reported that *A. tectorius* (Lour.) Merr. is synonymous with *Bembix tectoria* Lour. *A. extensus* Wall. ex Planch., *A. pinangianus* Wall., *A. extensus* var. *pinangianus* King and *A. hainanensis* (Burkill, 1935). Therefore, it is concluded that there is only one species of *Ancistrocladus* growing in Thailand.

The utility of this genus, except for some local information, is known for nothing. The tough stems of some of the species are

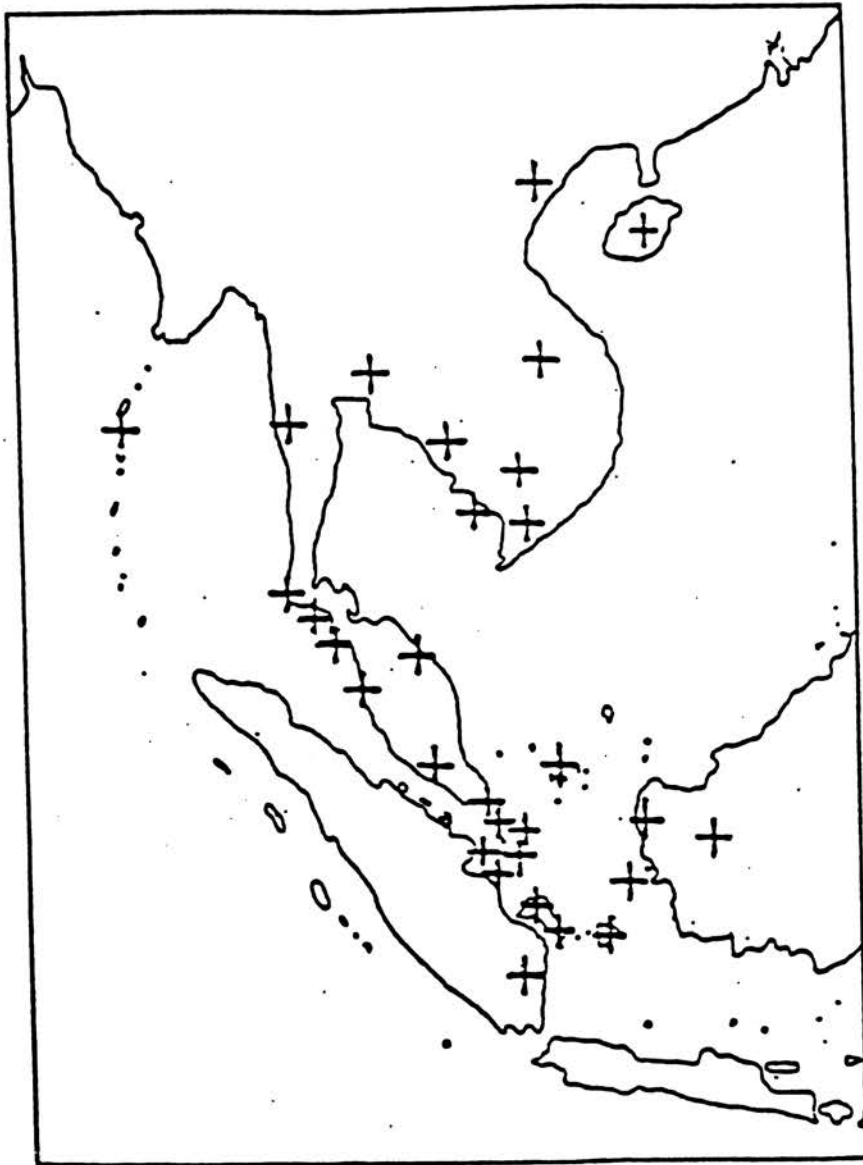


Figure 2. + Localities of *Ancistrocladus tectorius* (Lour.) Merr.
(from Malesiana. Ser I, Vol.4, pp.9)



Figure 3. *Ancistrocladus tectorius* (Lour.) Merr.

A. stem and flowering twig, B. hooked branch, C. fruit

D. petal and stamens, E. sepals

(from After Flora Hainomica, Tome I, 1964 p.515).

used in Indo-China, for roofing boats, and might be used for coopering, and perhaps for making seats of chairs. The roots of *A. extensus* Wall. (Burma and Malaya), after boiling, are said to be used in dysentery and malaria. The bark and leaves of *A. vahlii* Arn., of Ceylon, contain a poisonous alkaloid toxic to frogs, its wood is used for arrows making (Burkill, 1935; The Wealth of India, 1948).

In Thailand, the very young leaves of this species are edible as vegetable, when old they serve as thatch. In some folk-lore medicines in the eastern part of Thailand and Prachin Buri, its decoction is used as medicinal bath for the treatment of oedema and urticaria (Smitinand, 1977).

Govindachari *et al.*, investigated *Ancistrocladus heyneanus* Wall., in 1970 which lead to the discovery of Ancistrocladine, a new type of isoquinoline alkaloid (Govindachari *et al* , 1970). There was a report of alkaloids present in the stems and twigs of *A. tectorius*, i.e. ancistrocladeine (Foucher *et al* , 1975), ancistrocladeine, hamatine and ancistrocline (Chen *et al* , 1981). By means of chromatography Ruangrunsi *et al.*, Department of Pharmacognosy, Faculty of Pharmaceutical Sciences, Chulalongkorn University, isolated two alkaloids, one was obtained in quantity too small to be studied in order to propose a definite identification and another, ancistrotectorine, a new member of the naphthalene-isoquinoline series of alkaloids from the leaves of *Ancistrocladus tectorius* (Lour.) Merr. The configuration of ancistrotectorine is shown in Fig. 4. (Ruangrunsi *et al* , 1985).

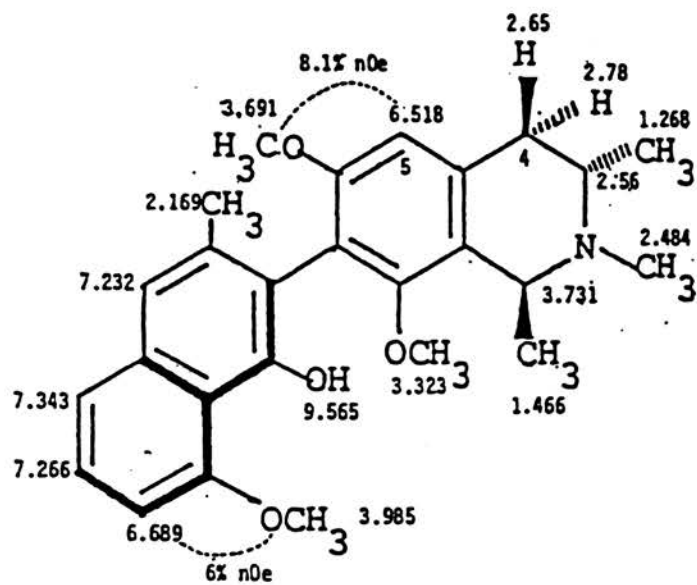


Figure 4. Structure of Ancistrotoctorine
(Stereochemistry omitted)

The melting point of ancistropectorine is 134 - 140° C, the molecular weight determined by mass spectrometry is 422, Ancistropectorine was obtained as pale yellow needles by crystallization with acetone.

Many isoquinoline alkaloids are physiologically active and some are of medicine important, Chelidonine, extract of *Chelidonium majus* is comparatively non-toxic, and in some of its effect resembles of morphine except its action is mainly peripheral, Extract of *Chelidonium majus* orally to human are mildly narcotic relieve bronchial spasms, dilate coronary vessels and relax intestinal smooth muscle (Manske, 1954).

Large amounts of codeine may cause excitement, Average doses are sedative, analgesic and antitussive, Emetine eradicates amebae from both intestinal and extraintestinal sites, then it may be used initially to control quickly severe intestinal amebiasis, Morphine is used as an analgesic, adjunct to anesthesia, antitussive and non-specific antidiarrheal agent. Another isoquinoline alkaloid is tubocurarine which is known to be competitive neuromuscular blocking agent (Gennaro, 1985).

Most of the isoquinoline alkaloids have many pharmacological action and therapeutic applications in common. The effect of ancistropectorine, a new naphthalene-isoquinoline alkaloid, was primarily screened on smooth muscle and found that this alkaloid had antispasmodic activity on isolated rabbit small intestine and isolated guinea-pig ileum. Ancistropectorine reduced not only the spontaneous

contraction but also the contraction of isolated guinea-pig ileum and rabbit small intestine produced by histamine, 5-hydroxytryptamine, barium, calcium and potassium. The spontaneous uterine contraction and the contraction induced by oxytocin, of guinea-pig were reduced by ancistrotectorine. These results suggested that the antispasmodic effect of ancistrotectorine might involve direct action upon the process of smooth muscle contraction in the small intestine and uterus.

It is interesting to investigate the effect of ancistrotectorine on the other smooth muscle. Owing to the primary screening the uterus and intestine which use acetylcholine as a neurotransmitter were performed. Vas deferens, which was different pharmacologically from uterus and intestine, was chosen in this study because it used norepinephrine as a neurotransmitter.

The present study describes physiological pharmacology of ancistrotectorine with special emphasis on its effect on smooth muscle of isolated rat vas deferens.