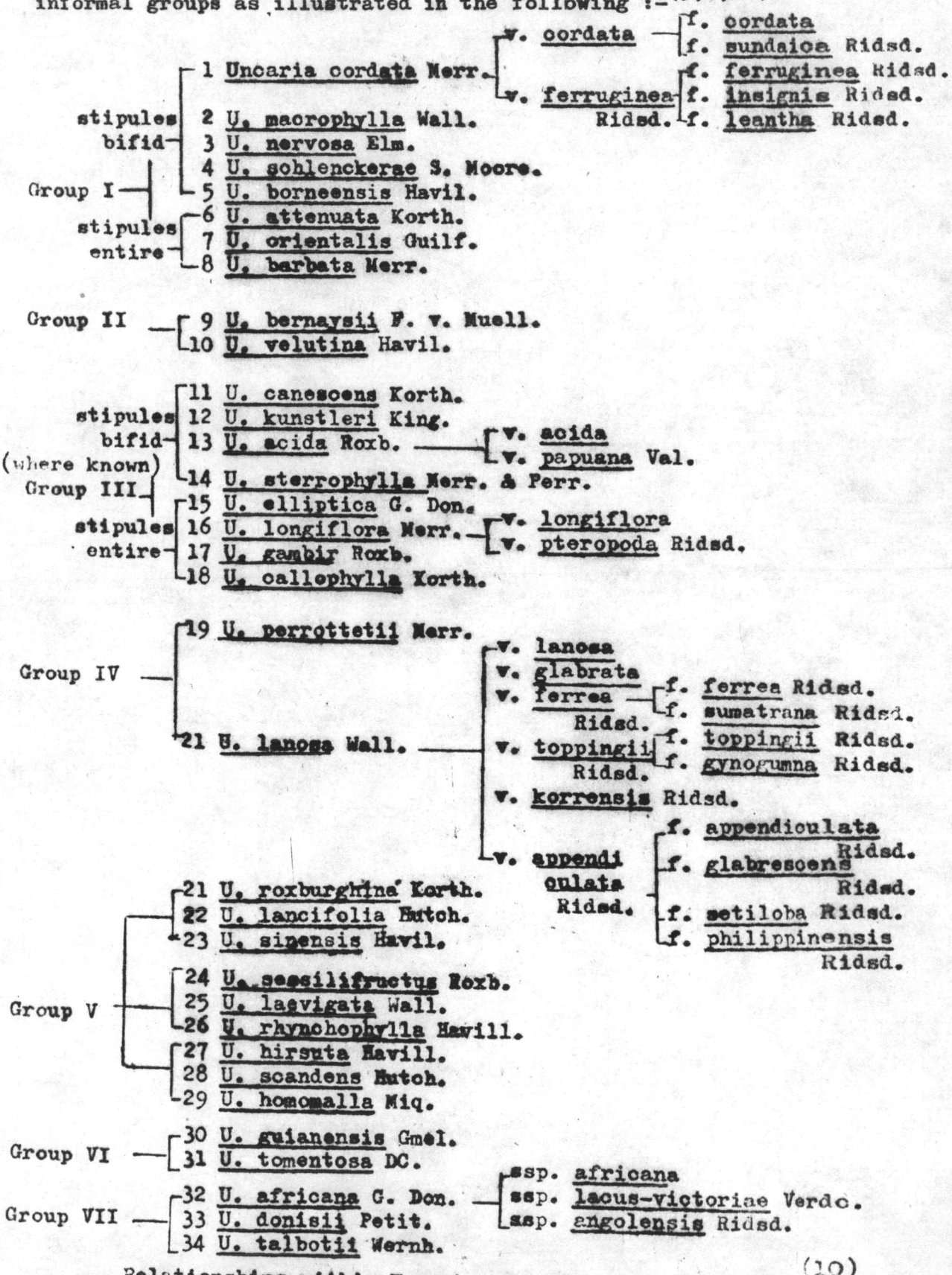
CHAPTER I

INTRODUCTION

Uncaria Schreber forms an easily recognisable genus, all species having a climbing habit and peduncles converted into recurved hooks as oustanding characters.(1) Formerly Adina Salisb., Mitragyna Korth., Uncaria Schreber, Nauclea L., Cephalanthus L., Sarococephalus Afz., Anthocephalus A. Rich., Breonia A. Rich. and Paracephaelis H. Bail. and other genera including Acrodryon Spreng., Metadina Bakh. f., Myrmeconauclea Merr., Paradina Pierre ex Pitard and Sarcopygme Setch. et Christoph. were placed in the tribe Naucleeae.(2,3,4) According to differences in morphological features, Ridsdale excluded Cephalanthus, Mitragyna and Uncaria from the tribe Naucleeae;(5) Mitragyna and Uncaria are now placed in the sub-tribe Mitragynineae of the tribe Cinchoneae.(5) Alkaloids from all ten species of the genus Mitragyna have been report, not all species of the closely related and larger genus, Uncaria, have been chemically investigated.(6) Some of the Uncaria alkaloids listed in the chemical literature originate from plant material of doubtful identity, and some are known to have arisen from the extraction of mixed collections.(43) In part, these difficulties may be attributed to the problems encountered in the identification of some of the individual Uncaria species. Difficulties in distinguishing between these species are reflected in the 120 specific names in the Index Keewensis which are now reduced to 34 in Ridsdale's recent revision.(5) They are arranged into seven

informal groups as illustrated in the following :- (5,7,10)



Relationships within Uncaria arranged as a dendrogram. (10)

The genus Uncaria is widely distributed in tropical regions, its stronghold being South East Asia from Malaysia to the Solomon Islands; however, it is also located in other part of Asia, in Africa and South America. In Thailand most of Uncaria species are concentrated in the southern part. Craib[8] reported that there were about 14 species of Uncaria growing in Thailand. In accordance with Ridsdale's recent revision, the species of Uncaria in Thailand are now reduced to 12 species. An alphabetical list of Uncaria growing in Thailand as recognized by Ridsdale[10] is presented as follows :-

Species	Distribution	Reference
1. Uncaria acida (Hunt.) Roxb. var. acida		5 5
22. U. attenuata Korth.	SuratThani, Chumpawn, Pattani	9
(U. salaccensis Bakh.f. nom provis)	Nakornrachasima	5
"Khrua-See-Liam, เครือสี่เหลี่ยม "		
3. U. borneensis Havil.	Peninsula	5 5
4. U. canescens Korth.	Peninsula; Phuket, SuratThani	5
5a U. cordata (Lour.) Merr. var. cordata f. cordata	Peninsula; SuratThani	5
(U. pedicellata King et Gamble)	SuratThani	9
"Ai-Hom, อ้ายโหม"	SuratThani, Ranawng,	8
"Leb-Rok, เล็บรอก"	Pattani	8,9
(U. sclerophylla King et Gamble)	Chantaburi, SuratThani, Phuket	
"Ka-Phum, กาพุ่ม "	Ranawng, Pattani, Naratiwat,	

Species	Distribution	Reference
"Tao-Yan, เถายาน "		8,9
5b Uncaria cordata (Lour.) Merr. var. ferruginea (Bl.)Ridsd. f. ferruginea (Bl)Ridsd.		
(U. glaucescens Craib) " "Yan-Chieo-Chu, ยานเจียวจู"	Phuket, Ranawng	8,9
5c U. cordata (Lour.) Merr. var. ferruginea (Bl)Ridsd. f. leiantha Ridsd.	Southern; Chantaburi, Peninsula; SuratThani, Phuket, NakornSriThammarat, Pattani	5
6. U. elliptica R. Br. ex G.Don.	Northern Peninsula	5
(U. salaccensis Bakh. f. nom provis "Khrua-See-Liam, เครือสีเหลี่ยม"	Nakornrachasima	
7. U. homomalla Miq. "Ai-Ngop, อายโงบ" "E-Ngop, อีโงบ " "Ngop, โงบ" "Kao-Kwai-Mae-Lup, เขาควายแมหลบ " "Kao-Kwai-Mae-Wong, เขาควายแมวอง "	Northern; Nan, Lampang, Southeastern; Chantaburi, Prachinburi, Southern; Rachaburi, Peninsula; Pattani	8,9
(U. parvifolia Ridl.)	Yala	8
(U. quadrangularis Geddes)	Southern	9,26
8. U. laevigata Wall. ex G.Don.	Northern; ChiengMai Southeastern; Chantaburi	5
9. U. lanosa Wall.	SuratThani, Phuket	9
a. U. lanosa Wall. var. ferrea f. ferrea (Bl.) Ridsd.		
(U. ferrea DC.) "Ngop,โงบ " " " "Nam-Chao-Chu, หนามเจาชู "	Ranawng, NakornSriThammarat, Patalung-Trang Ridge	8,9

Species	Distribution	Reference
10. Uncaria longiflora (Poir.) Merr. var. longiflora	Peninsula; SuratThani, Pattani	5
(U. longiflora Merr.) "Kieo-Cho, เกี่ยวโช"	ChiengMai	8,9
(U. pteropoda Miq.)		8
(U. trinervis Havil. var. pteropoda)	SuratThani	9
11. U. macrophylla Wall., "Kwai-Mae-Lup, ควายแม่หลูบ"	Northern; ChiengMai	5
12. U. scandens (Smith) Hutch.	Northern; MaeHongSorn, Northeastern; UdonThani,	5
(U. pilosa Roxb.)	UdonThani, NawngKai	9

Uncaria homomalla Miq. belongs to group V, this group contains nine species representing the Indo-China taxa which are geographically and morphologically distinct from all the other taxa.[5,10] Three pyridino-indolo-quinolizidinone alkaloids, angustine, angustoline, and angustidine,[11,12] and four pentacyclic oxindole alkaloids, isopteropodine, pteropodine, speciophylline and uncarine F[25] have been isolated from Uncaria homomalla Miq. leaves but no corresponding heteroyohimbine alkaloids have been isolated. Enviromental factors, for example, soil and climatic conditions, may influence the production of alkaloids and the types elaborated. Their rate of formation may also tend to fluctuate during growth and development of the plant. In some species of the neighbouring genus, Mitrophyll, the production of heteroyohimbines and

oxindole alkaloids has been demonstrated to be subject to seasonal variation.[62-68] In the young leaves of Mitragyna parvifolia (Roxb.) Korth., heteroyohimbines predominate; these give way to oxindoles having corresponding E-ring structure at later stages of leaf development.[62] Furthermore, it has been demonstrated that the interconversion of tetracyclic and pentacyclic alkaloids take place in Mitragyna parvifolia (Roxb.) Korth.[62-68] Hence this thesis deals with examination of Uncaria homomalla Miq. leaves collected at regular monthly intervals from the same plant throughout the year which might give some indications of variation in seasons, ages, growth and development.