CONTENTS

	Pages
Abstract	(3)
Acknowledgements	(7)
Contents	(8)
List of Tables	(9)
List of Figures	(11)
List of Abbreviations	(13)
Chapter	
1. Introduction	1
2. Literature Review	5
3. Materials and Methods	29
4. Results and Discussions	45
5. Conclusion	101
References	104
Appendices	117
Vitae	126

LIST OF TABLES

Table		Pages
2.1	List of Hypocrella found in Thailand (Hywel-Jones, 2003.	14
	pers. comm.)	
2.2	Characteristics of H. discoidea, H. scutata and H.	15-19
	schizostachyi	
3.1	Lists of the primers for fungal rDNA amplification	41
	(sequence from 5' to 3')	
4.1	The characteristics of <i>H. scutata</i> . (Petch, 1921)	50
4.2	Cross-tabulation of the number of sampled plants (S.	59
	tumida and S. oblatum) and H. scutata occurrence	
4.3	χ^2 tests of the number of sampled plants (S. tumida and S.	60
	oblatum) and H. scutata occurrence	
4.4	Frequencies of the number of sampled plants (S. tumida	61
	and S. oblatum) and H. scutata occurrence	
4.5	Test statistics of the number of sampled plants (S. tumida	61
	and S. oblatum) and H. scutata occurrence	
4.6	Cross-tabulation of the number of sampled plants (S.	63
	tumida) and H. scutata occurrence	
4.7	χ^2 tests of the number of sampled plants (S. tumida) and H.	64
	scutata occurrence	
4.8	Frequencies of the number of sampled plants (S. tumida)	65
	and H. scutata occurrence	
4.9	Test statistics of the number of sampled plants (S. tumida)	65
	and H. scutata occurrence	

LIST OF TABLES (continued)

Table		Pages
4.10	Cross-tabulation of the number of sampled plants (S.	67
	oblatum) and H. scutata occurrence	
4.11	χ^2 Tests of the number of sampled plants (S. oblatum)	68
	and H. scutata occurrence	
4.12	Frequencies of the number of sampled plants (S.	69
	oblatum) and H. scutata occurrence	
4.13	Test statistics of the number of sampled plants (S.	69
	oblatum) and H. scutata occurrence	

LIST OF FIGURES

Figure		Pages
2.1	The repeated unit of the nuclear ribosomal DNA genes.	23
3.1	The positions of primers on the nuclear rDNA	40
4.1	Survey sites	48
4.2	The macroscopic appearance of mature Hypocrella	49
	scutata, a) actual size, b) and c) with higher	
	magnification	
4.3	Light microscopy study of H. scutata, a) the perithecia,	52
	b) the periphyses, c) the ascus with part- spores, d) the	
	ascospores.	
4.4	The anamorph of <i>H. scutata</i> on PDA, a) producing	53
	conidia on the stroma, b) the non-producing conidial	
	stroma, c) the conidia.	
4.5	The scanning electron microscopy study of <i>H. scutata</i> , a)	54
	asci, b) asci, c) ascospores, d) ascospores.	
4.6	The conidia of the anamorph of H. discoidea (type	55
	species).	
4.7	The conidia of the anamorph of H. schizostachyi	56
4.8	The conidia of the anamorph of H. scutata	57
4.9	Growth of H. schizostachyi on four different media at	72
	20, 25, 30°C.	
4.10	Growth of H. scutata SSC32 on four different media at	73
	20, 25 and 30°C	
4.11	Growth of H. scutata SSC33 on four different media at	74
	20, 25, 30°C	

LIST OF FIGURES (continued)

Figure		Pages
4.12	Growth of Hypocrella scutata SSC47 on four different	75
	media at 20, 25, 30°C	
4.13	Growth of H. schizostachyi NHJ 4547 on four different	76
	media at 25°C	
4.14	Growth of H. scutata SSC 32 on four different media	77
	at 25°C	
4.15	The genomic DNA from CTAB DNA extraction	79
	method	
4.16	PCR-amplified 28S rDNA fragments of H. scutata	82
	SSC 57 and H. schizostachyi NHJ 4547	
4.17	Phylogram of 46 taxa of the Hypocreales	93
4.18	Strict consensus of 3 most parsimony phylogenetic tree	94
	with heuristic search based on partial 28S rDNA	
	sequences from 46 taxa of Hypocreales	
4.19	Phylogram of 30 taxa of Hypocreales	95
4.20	Strict consensus of 4 most parsimony phylogenetic tree	96
	with heuristic search based on partial 28S rDNA	
	sequences from 30taxa of Hypocreales	
4.21	Phylogram of 26 taxa of Hypocreales	97
4.22	Strict consensus of 7 most parsimony phylogenetic tree	98
	with heuristic search based on partial 28S rDNA	
	sequences from 26 taxa of Hypocreales	
4.23	Phylogram of 24 taxa of Hypocreales	99
4.24	Strict consensus of 4 most parsimony phylogenetic tree	100
	with heuristic search based on partial 28S rDNA	
	sequences from 24 taxa of Hypocreales	

LIST OF ABBREVIATIONS

cm = centimetre

Fig = Figure

 $g \hspace{2cm} = \hspace{2cm} gram$

°C = Degree Celcius

1 = litre

mm = millimetre

 $\mu m = micrometre$

mg = milligram

μg = microgram

ng = nanogram

Pers. comm. = Personal communication