

LIST OF FIGURES

Figure Nos.		Page Nos.
2.1	<i>Clerodendrum phlomidis</i>	11
2.2	Chemical structures of some isolated compounds from <i>C. phlomidis</i>	22-23
2.3	<i>Nymphaea stellata</i>	33
2.4	Chemical structure of nymphayol	41
4.1.1	<i>Clerodendrum phlomidis</i>	81
4.1.2	Leaves of <i>C. phlomidis</i>	83
4.1.3	TS of <i>C. phlomidis</i> showing prominent midrib	84
4.1.4	TS of <i>C. phlomidis</i> showing single strand vascular bundles	84
4.1.5	TS of <i>C. phlomidis</i> showing three strands of vascular bundles	84
4.1.6	TS of <i>C. phlomidis</i> showing the lamina region	85
4.1.7	TS of <i>C. phlomidis</i> showing glandular trichomes	85
4.1.8	TS of <i>C. phlomidis</i> showing peltate trichomes	85
4.1.9	Powder analysis of <i>C. phlomidis</i> showing trichomes	86
4.1.10	Powder analysis of <i>C. phlomidis</i> showing stomata	86
4.1.11	Chemical structure of adrenaline	94
4.1.12	Standard adrenaline band and <i>C. phlomidis</i> extract	95
4.1.13	<i>C. phlomidis</i> leaf extract showing identical peak with standard adrenaline	96
4.1.14	Spectral comparison for the peaks of standard adrenaline and <i>C. phlomidis</i> leaf extract	97
4.1.15	Calibration curve of peak area versus concentration for adrenaline	97
4.1.16	Chemical structure of l-dopa	100

4.1.17	Standard l-dopa band and <i>C. phlomidis</i> extract	101
4.1.18	<i>C. phlomidis</i> leaf extract showing identical peak with standard l-dopa	102
4.1.19	Spectral comparison for the peaks of standard l-dopa and <i>C. phlomidis</i> leaf extract	102
4.1.20	Calibration curve of peak area versus concentration for l-dopa	103
4.1.21	Chemical structure of lupeol	105
4.1.22	Standard lupeol band and <i>C. phlomidis</i> extract	105
4.1.23	<i>C. phlomidis</i> leaf extract showing identical peak with standard lupeol	106
4.1.24	Spectral comparison for the peaks of standard lupeol and <i>C. phlomidis</i> leaf extract	107
4.1.25	Calibration curve of peak area versus concentration for lupeol	107
4.1.26	Chemical structure of β -sitosterol	109
4.1.27	Standard β -sitosterol band and <i>C. phlomidis</i> extract	110
4.1.28	<i>C. phlomidis</i> leaf extract showing identical peak with standard β -sitosterol	111
4.1.29	Spectral comparison for the peaks of standard β -sitosterol and <i>C. phlomidis</i> leaf extract	112
4.1.30	Calibration curve of peak area versus concentration for β -sitosterol	112
4.1.31	Chemical structure of β -carotene	114
4.1.32	Standard β -carotene band and <i>C. phlomidis</i> extract	115
4.1.33	<i>C. phlomidis</i> leaf extract showing identical peak with standard β -carotene	115
4.1.34	Spectral comparison for the peaks of standard β -carotene and <i>C. phlomidis</i> leaf extract	116

4.1.35	Calibration curve of peak area versus concentration for β -carotene	116
4.1.36	Amino acid identification in <i>C. phlomidis</i> extract (a)	118
4.1.37	Amino acid identification in <i>C. phlomidis</i> extract (b)	118
4.1.38	TLC of crude polyamine extract of <i>C. phlomidis</i>	119
4.1.39	Schematic diagram of the nuclear rDNA internal transcribed spacer region. The three rDNA subunits: 18S, 5.8S and 26S are separated by ITS1 and ITS2	121
4.1.40	DNA sequences for ITS of <i>C. phlomidis</i>	122
4.1.41	Parsimony tree of <i>C. phlomidis</i> from cladistic analysis of ITS sequence data	123
4.1.42	IR spectrum of CP I	125
4.1.43	CHN analysis of CP I	126
4.1.44	Oxygen analysis of CP I	126
4.1.45	^1H NMR of CP I	127
4.1.46	Chemical structure of CP I	127
4.1.47	Densitogram and TLC photograph of CP I	128
4.1.48	UV-Vis spectra of CP I	128
4.1.49	IR spectrum of CP II	130
4.1.50	Mass spectrum of CP II	130
4.1.51	^1H NMR of CP II	131
4.1.52	CHN analysis of CP II	132
4.1.53	Oxygen analysis of CP II	132
4.1.54	Chemical structure of CP II	132
4.1.55	<i>C. phlomidis</i> leaf extract showing identical peak with isolated CP II	135
4.1.56	Spectral comparison for the peaks of isolated CP II and <i>C. phlomidis</i> leaf extract	135

4.1.57	Calibration curve of peak area versus concentration for CP II	137
4.1.58	IR spectrum of CP III	138
4.1.59	CHN analysis of CP III	139
4.1.60	Oxygen analysis of CP III	139
4.1.61	¹³ C NMR of CP III	140
4.1.62	Chemical structure of CP III	140
4.1.63	Densitogram and TLC photograph of CP III	141
4.1.64	UV-Vis spectra of CP III	141
4.1.65	Comparison of changes in plasma glucose level in control and experimental groups of <i>C. phlomidis</i>	145
4.1.66	Comparison of changes in plasma insulin level in control and experimental groups of <i>C. phlomidis</i>	145
4.1.67	Comparison of changes in body weight in control and experimental groups of <i>C. phlomidis</i>	151
4.1.68	Histological slides showing changes in the endocrine (islets of Langerhans) and exocrine pancreas (acini) of control and experimental groups of <i>C. phlomidis</i>	152-154
4.1.69	Gas chromatogram of UPFMCP of <i>C. phlomidis</i> leaves	158
4.1.70	Different phosphatases showing the site of phosphorylation	161
4.1.71	The role of PTP1B in insulin and leptin signaling	161
4.1.72	% inhibition of PTP1B by extracts / fractions / compounds of <i>C. phlomidis</i>	164
4.1.73	Brine shrimp nauplii immediately after hatching and 24 h after hatching	167
4.1.74	Platelet thrombus formation	171
4.1.75	Percentage inhibition of platelet aggregation of extracts / fractions / compounds of <i>C. phlomidis</i>	171

4.1.76	Common pathological processes in AD and type 2 DM	178
4.1.77	Comparison of % inhibition of acetylcholinesterase of extracts/fractions/compounds of <i>C. phlomidis</i>	179
4.2.1	<i>Nymphaea stellata</i>	182
4.2.2	Leaves of <i>N. stellata</i>	183
4.2.3	TS of <i>N. stellata</i> showing smaller vascular bundles in the median part of the lamina	185
4.2.4	TS of <i>N. stellata</i> showing smaller vascular bundles beneath the palisade zone	185
4.2.5	TS of <i>N. stellata</i> showing the aerenchyma zone	186
4.2.6	TS of <i>N. stellata</i> showing stellately branched, long armed trichosclereids	186
4.2.7	TS of <i>N. stellata</i> showing trichosclereid in higher magnification	186
4.2.8	Powder analysis of <i>N. stellata</i> showing abundant trichosclereids	187
4.2.9	Powder analysis of <i>N. stellata</i> showing large masses of calcium oxalate crystals	187
4.2.10	<i>N. stellata</i> leaf extract showing identical peak with standard lupeol	191
4.2.11	Spectral comparison for the peaks of standard lupeol and <i>N. stellata</i> leaf extract	192
4.2.12	Calibration curve of peak area versus concentration for lupeol	192
4.2.13	<i>N. stellata</i> leaf extract showing identical peak with standard β -sitosterol	194
4.2.14	Spectral comparison for the peaks of standard β -sitosterol and <i>N. stellata</i> leaf extract	195

4.2.15	Calibration curve of peak area versus concentration for β -sitosterol	195
4.2.16	<i>N. stellata</i> leaf extract showing identical peak with standard β -carotene	197
4.2.17	Spectral comparison for the peaks of standard β -carotene and <i>N. stellata</i> leaf extract	198
4.2.18	Calibration curve of peak area versus concentration for β -carotene	198
4.2.19	Chemical structure of oleanolic acid	200
4.2.20	<i>N. stellata</i> leaf extract showing identical peak with standard oleanolic acid	201
4.2.21	Spectral comparison for the peaks of standard oleanolic acid and <i>N. stellata</i> leaf extract	201
4.2.22	Calibration curve of peak area versus concentration for oleanolic acid	202
4.2.23	Chemical structure of betulinic acid	204
4.2.24	<i>N. stellata</i> leaf extract showing identical peak with standard betulinic acid	204
4.2.25	Spectral comparison for the peaks of standard betulinic acid and <i>N. stellata</i> leaf extract	205
4.2.26	Calibration curve of peak area versus concentration for betulinic acid	205
4.2.27	Chemical structure of gallic acid	207
4.2.28	<i>N. stellata</i> leaf extract showing identical peak with standard gallic acid	207
4.2.29	Spectral comparison for the peaks of standard gallic acid and <i>N. stellata</i> leaf extract	208
4.2.30	Calibration curve of peak area versus concentration for gallic acid	208

4.2.31	Comparison of changes in plasma glucose level in control and experimental groups of <i>N. stellata</i>	212
4.2.32	Comparison of changes in plasma insulin level in control and experimental groups of <i>N. stellata</i>	212
4.2.33	Comparison of changes in body weight in control and experimental groups of <i>N. stellata</i>	215
4.2.34	Histological slides showing changes in the endocrine (islets of Langerhans) and exocrine pancreas (acini) of control and experimental groups of <i>N. stellata</i>	217-218
4.2.35	IR spectrum of NS I	221
4.2.36	% inhibition of PTP1B by extracts / fractions / compounds of <i>N. stellata</i>	223
4.2.37	Percentage inhibition of platelet aggregation of extracts/fractions/compounds of <i>N. stellata</i>	226
4.2.38	Comparison of % inhibition of acetylcholinesterase of extracts/fractions/compounds of <i>N. stellata</i>	228