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APPENDICES

Appendix A

Body weight, liver weight, food and water consumption

Table A1 Body weight of an individual rat in the control group

Rat No.	Day 0	Day 7	Day 14	Day 21	Day 28
1	196.2	195.4	199	202.5	205
2	212	213	226.2	238.6	243.6
3	220	220.2	231.2	240.2	245.6
4	224.6	233	238	240.8	246.2
5	236	238	247.5	251.5	255.8
6	252.5	223	240.5	248	252.9
7	265	271.6	269.2	275.5	277.7
8	239.2	237.5	240.5	251.6	253.8
9	241.4	235	258.5	252	261.2
10	243.2	254	260	260.8	254.7
Average	233.01	232.07	241.06	246.15	249.65
SEM	6.378	6.7075	6.3187	5.9613	5.8403

Unit expressed as g

Table A2 Body weight of an individual rat in *C. comosa* group I

Rat No.	Day 0	Day 7	Day 14	Day 21	Day 28
1	224.5	200.5	211.2	218.4	218
2	225.5	225.5	226	238.2	240
3	237.5	232.6	235	238	236.1
4	224	224.4	232.6	236	237.7
5	241	237	248.7	255.3	253.5
6	234.5	226.8	237.9	240.7	-
7	248.7	253.5	245	237.5	244.5
8	240	241.7	252.5	256.2	252.3
9	252.1	237.9	240	239.6	262.8
10	215.3	210	219.3	223.5	226.1
Average	234.31	228.99	234.82	238.34	241.2222
SEM	3.7304	4.8639	4.1187	3.7087	4.6516

Unit expressed as g

Table A3 Body weight of an individual rat in *C. comosa* group II

Rat No.	Day 0	Day 7	Day 14	Day 21	Day 28
1	225	227.5	232.5	236.7	235.8
2	203.5	207	213	219.8	225.7
3	226	224.4	232	236	238.7
4	218.5	222.8	227.4	230.5	236
5	232	232	239	238.4	240
6	225	225	223.6	229.5	235.7
7	263.6	262.5	258.4	255.8	-
8	237.8	235	222.9	220	225
9	266.5	257.1	260.0	263.6	-
10	251.4	245.6	249.6	243.0	261.4
Average	234.93	233.89	235.84	234.4111	237.2875
SEM	6.3609	5.3283	4.9755	3.7556	3.9695

Unit expressed as g

Table A4 Body weight of an individual rat in *C. comosa* group III

Rat No.	Day 0	Day 7	Day 14	Day 21	Day 28
1	227	239.2	232.5	238.8	245.8
2	221.5	225	235	234.5	237.6
3	246.5	245.5	257.2	254.7	238
4	216.5	219.3	220.7	224.8	225.7
5	223	225.3	227.5	227.3	205.2
6	230	235.3	235.3	233.4	-
7	245.9	240.8	240.5	242	241.3
8	250.5	247	254.5	242.2	258.3
9	232	228.8	235.8	238.2	238.7
Average	232.5444	234.0222	237.6667	237.3222	236.3250
SEM	4.0885	3.2830	3.9212	2.9609	5.4921

Unit expressed as g

Table A5 Terminal body weight of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	207.2	205	235.8	250
2	231.9	235	215.6	222.7
3	231.4	227.6	226.5	233.4
4	236.5	225.4	227.9	217.7
5	240	240	221.6	200.8
6	244.6	240.7	223.3	233.4
7	233.8	244.5	255.8	263
8	248.7	245.2	219	245.8
9	250	246	263.6	241
10	252.7	228.4	262.4	
Average	237.68	233.78	234.79	234.2
SME	4.1772	4.0116	5.6569	6.2151

Unit expressed as g

Table A6 Food consumption of individual rat in the control group

Rat No.	Day0	Day 5	Day 10	Day 15	Day 20	Day 25
1	9	11	15.45	13.2	13.85	11.05
2	17.0	11.0	15.45	13.2	13.85	11.05
3	15	12	11.15	12.4	14.05	10.4
4	15.5	12	11.5	12.4	14.05	10.4
5	9.5	13.1	15.2	12.25	17.0	13.0
6	13.1	15.2	12.25	17.0	13.0	13.05
7	8.8	12.5	12.6	24.8	16.65	20.0
8	13.1	12.5	12.6	24.8	16.65	20.0
9	15.8	16.5	14.4	15.25	12.0	13.2
10	14.3	16.5	14.4	15.25	12.0	13.2
Average	13.11	13.23	13.50	16.0550	14.055	13.5350
SEM	0.9520	0.6610	0.5251	1.5371	0.5882	1.1370

Unit expressed as g/day

Table A7 Food consumption of individual rat in *C. comosa* group I

Rat No.	Day0	Day 5	Day 10	Day 15	Day 20	Day 25
1	15.5	14.4	13.4	13.25	6.75	6.8
2	16	14.4	13.4	13.25	6.75	6.8
3	13.0	10.75	10.95	8.55	12.55	9.35
4	10.75	6.95	10.95	8.55	12.55	9.35
5	9.5	4.3	12.6	9.2	10.45	5.85
6	4.3	12.6	9.2	10.45	5.85	-
7	8.8	10.0	6.0	19.2	11.5	15.5
8	13.0	10.0	6.0	19.2	13.1	15.5
9	11.1	12.55	9.8	17.65	14.65	12.05
10	5.1	12.55	9.8	17.65	14.65	12.05
Average	10.7050	10.85	10.21	13.695	10.88	10.3611
SEM	1.2438	1.0199	0.8430	1.3983	1.0484	1.2149

Unit expressed as g/day

Table A8 Food consumption of individual rat in *C. comosa* group II

Rat No.	Day0	Day 5	Day 10	Day 15	Day 20	Day 25
1	13	10.3	10	13.45	7.65	11.8
2	11.3	10.3	10	13.45	7.65	11.8
3	11.0	6.95	16.35	7.65	16.0	12.5
4	12.3	4.3	16.35	7.65	16.0	12.5
5	2.6	2.75	12.65	5.95	8.65	7.2
6	2.75	2.75	12.65	5.95	8.65	7.2
7	6.9	10.15	0.15	9.5	9.6	10.5
8	20.7	10.15	0.15	10.5	9.6	10.25
9	11.2	10.0	10.7	5.45	-	-
10	10.2	10.0	10.7	5.45	20.6	15.5
Average	10.195	7.765	9.97	8.50	11.60	11.0278
SEM	1.665	1.0392	1.7941	0.9835	1.5649	0.8797

Unit expressed as g/day

Table A9 Food consumption of individual rat in *C. comosa* group III

Rat No.	Day0	Day 5	Day 10	Day 15	Day 20	Day 25
1	15	12.7	6.9	13.65	6.0	12.55
2	21.5	12.7	6.9	13.65	1.1	12.55
3	17.0	14.4	18.65	10.25	15.75	6.55
4	15.0	14.4	18.65	10.25	15.75	6.55
5	16.0	7.0	15.6	10.0	12.65	7.65
6	7.25	7.0	15.6	10.0	12.65	7.65
7	11.6	19.6	5.7	9.25	16.05	13.5
8	19.6	19.6	5.7	9.25	16.03	13.5
9	8.6	12.95	10.55	12.5	14.2	12.6
Average	14.6167	13.3722	11.5833	10.9778	12.2422	10.3444
SEM	1.5797	1.4999	1.8496	0.5956	1.7569	1.0411

Unit expressed as g/day

Table A10 Water consumption of an individual rat in the control group

Rat No.	Day0	Day 5	Day 10	Day 15	Day 20	Day 25
1	29.0	20.2	23.25	34.25	35.3	34.05
2	61.0	20.2	23.25	34.25	35.3	34.05
3	41	20.85	27.75	28.9	28.0	20.65
4	20.2	20.85	27.75	28.9	28.0	20.65
5	43	27.95	26.9	30.1	44.25	30.5
6	33.65	27.95	26.9	30.1	44.25	30.5
7	59.3	82.7	26.45	40.75	40.6	40.25
8	35.0	82.7	26.45	40.75	40.6	40.25
9	38.6	41.35	22.75	34.45	24.65	30.7
10	56.2	41.35	22.75	34.45	24.65	30.7
Average	41.695	38.61	25.42	33.69	34.56	31.23
SEM	4.2655	7.7738	0.6752	1.3870	2.4593	2.1193

Unit expressed as g/day

Table A11 Water consumption of an individual rat in *C. comosa* group I

Rat No.	Day0	Day 5	Day 10	Day 15	Day 20	Day 25
1	98.5	40.5	31.05	33.4	22.4	31.4
2	59.0	40.5	31.05	33.4	22.4	31.4
3	51.0	49.85	46.0	30.15	62.55	34.65
4	50.0	49.85	46.0	30.15	62.55	34.65
5	20.5	24.75	23.35	18.7	25.5	23.75
6	23.75	24.75	23.35	18.7	25.5	-
7	33.5	62.5	17.3	32.05	22.7	20.0
8	32.1	62.5	17.3	32.05	28.5	20.0
9	107.8	36.0	21.25	49.1	41.2	31.5
10	37.8	36.0	21.25	49.1	41.2	31.5
Average	51.395	42.72	27.79	32.68	35.45	28.7611
SEM	9.4613	4.256	3.3822	3.2399	5.0381	1.9611

Unit expressed as g/day

Table A12 Water consumption of an individual rat in *C. comosa* group II

Rat No.	Day0	Day 5	Day 10	Day 15	Day 20	Day 25
1	36.9	25.25	20.0	26.35	23.35	35.05
2	16.7	25.25	20.0	26.35	23.35	35.05
3	46.5	27.25	27.5	26.25	33.85	24.3
4	25.65	27.25	27.5	26.25	33.85	24.3
5	22.0	21.2	31.3	20.0	33.0	11.35
6	21.0	21.2	31.3	20.0	33.0	11.35
7	49.3	77.2	12.75	20.25	25.4	28.50
8	29.8	77.2	12.75	17.0	25.4	26.5
9	26.4	47.45	31.6	8.1	-	-
10	61.3	47.45	31.6	8.1	44.6	11.6
Average	33.555	39.67	24.63	19.865	30.6444	23.1111
SEM	4.594	6.948	2.4216	2.2382	2.3209	3.2006

Unit expressed as g/day

Table A13 Water consumption of an individual rat in *C. comosa* group III

Rat No.	Day0	Day 5	Day 10	Day 15	Day 20	Day 25
1	48	20.5	28.85	39.1	41.8	51.6
2	57.6	20.5	28.85	39.1	47.5	51.6
3	65.5	65.95	72.35	44.65	41.9	21.35
4	60.0	65.95	72.35	44.65	41.9	21.35
5	38.0	41.95	31.9	31.5	33.2	13.6
6	26.95	41.95	31.9	31.5	33.2	13.6
7	35.6	63.8	16.3	10.7	39.8	60.0
8	33.5	63.8	16.3	10.7	39.8	60.0
9	32.4	62.55	37.0	21.2	42.0	14.5
Average	44.1722	49.6611	37.3111	30.3444	40.1222	34.1778
SEM	4.6563	6.3642	7.0121	4.4421	1.5052	6.9760

Unit expressed as g/day

Table A14 Liver weight of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	6.27	6.52	9.25	10.18
2	6.21	7.31	8.18	10.03
3	8.1	6.95	8.06	14.25
4	7.05	8.87	10.38	11.96
5	6.79	7.43	10.84	9.55
6	8.18	9.86	8.10	13.56
7	7.57	11.83	14.70	11.74
8	8.15	9.48	11.63	10.63
9	6.69	8.09	12.23	12.28
10	9.98	9.57	13.34	
Average	7.499	8.591	10.671	11.5756
SME	0.3642	0.5180	0.7339	0.5413

Unit expressed as g

Appendix B

Verification of methods for the determination of alkoxyresorufin O-dealkylation, aniline 4-hydroxylation and erythromycin N-demethylation

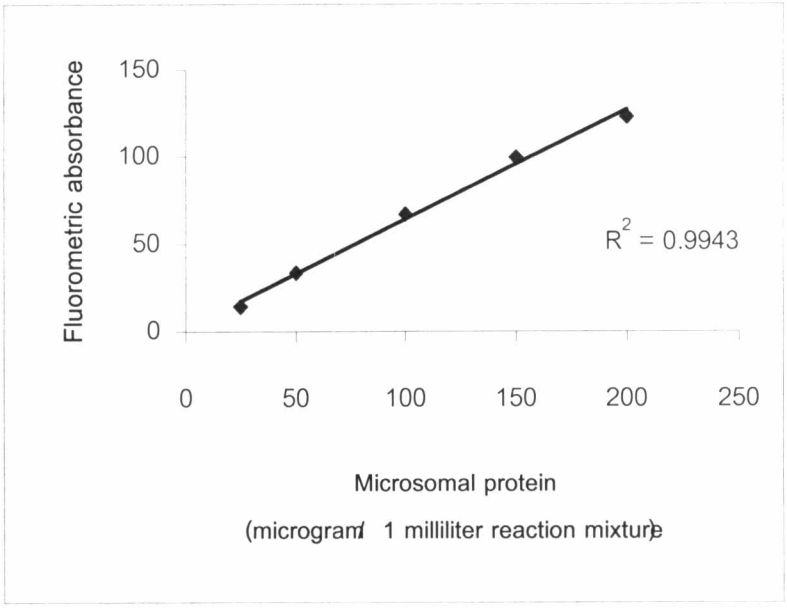


Figure B1 Verification of alkoxyresorufin O-dealkylation. Correlation between amounts of microsomal protein used in the reaction and the corresponding fluorometric absorbances was shown to possess a correlation coefficient (r^2) of 0.9943. Each point was mean of n=2. (Procedure was demonstrated in the Materials and Methods.)

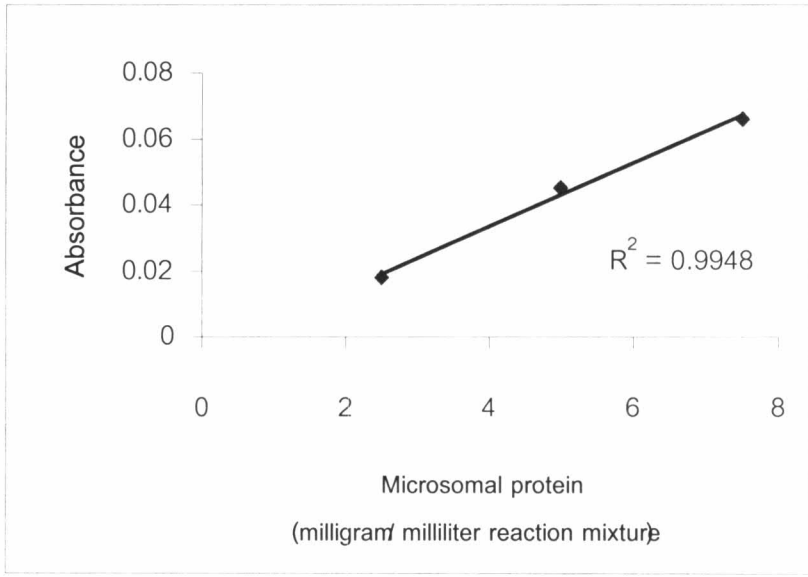


Figure B2 Verification of aniline 4- hydroxylation. Correlation between amounts of microsomal protein used in the reaction and the corresponding fluorometric absorbances was shown to possess a correlation coefficient (r^2) of 0.9948. Each point was mean of n=2. (Procedure was demonstrated in the Materials and Methods.)

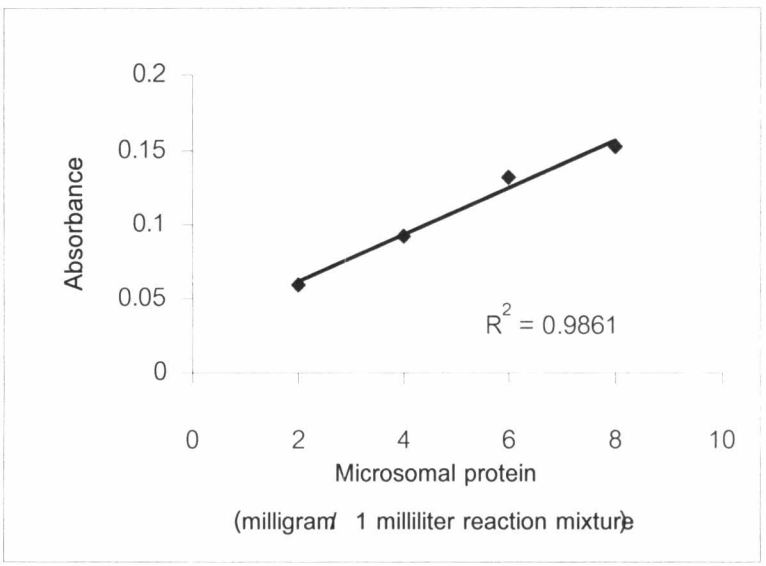


Figure B3 Verification of erythromycin N-demethylation. Correlation between amounts of microsomal protein used in the reaction and the corresponding fluorometric absorbances was shown to possess a correlation coefficient (r^2) of 0.9861. Each point was mean of n=2. (Procedure was demonstrated in the Materials and Methods.)

Appendix C

Enzyme activity study

Table C1 Microsomal protein concentration of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	18.61	20.46	10.37	27.87
2	18.61	21.57	25.46	30
3	12.50	16.94	26.67	28.15
4	13.89	15.93	13.52	25.46
5	15.67	23.87	28.66	21.50
6	27.93	23.30	33.40	50.22
7	19.07	44.64	34.95	30.82
8	35.57	24.43	30.51	31.96
9	22.98	24.32	42.48	34.23
10	28.55	31.85	40.93	
Average	21.338	24.731	28.695	31.1344
SME	2.3249	2.6172	3.3081	2.6887

Unit expressed as mg/ml

Table C2 Hepatic microsomal total CYP content of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	0.5879	0.4011	0.3132	0.6154
2	0.4560	0.5330	0.4505	0.3956
3	0.3736	0.4176	0.5110	0.3846
4	0.3187	0.3681	0.3516	0.5110
5	0.4286	0.5220	0.3187	0.2472
6	0.3077	0.1813	0.3187	0.4505
7	0.3626	0.3104	0.3324	0.4038
8	0.4038	0.3681	0.2885	0.4478
9	0.3599	0.3242	0.3188	0.5220
10	0.3104	0.3407	0.4615	
Average	0.3909	0.3766	0.3665	0.4420
SME	0.0269	0.0324	0.0245	0.0346

Unit expressed as nmol/mg protein

Table C3 Hepatic microsomal EROD activity of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	14	11	16	16
2	7	13	43	32
3	15	11	20	30
4	8	12	28	25
5	12	23	41	11
6	22	67	45	71
7	20	26	35	51
8	26	32	11	23
9	34	14	59	46
10	17	51	69	
Average	17.5	26.0	36.7	33.8889
SME	2.6257	6.0646	5.8823	6.3211

Unit expressed as pmol/mg protein/min

Table C4 Hepatic microsomal MROD activity of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	9	6	4	6
2	9	11	13	15
3	15	8	26	8
4	6	15	11	7
5	8	9	7	2
6	7	5	10	10
7	9	4	5	6
8	5	6	3	7
9	6	5	7	6
10	9	10	8	
Average	8.3	7.9	9.4	7.4444
SME	0.8825	1.0796	2.0934	1.1798

Unit expressed as pmol/mg protein/min

Table C5 Hepatic microsomal BROD activity of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	5	13	52	72
2	3	12	30	55
3	5	19	86	66
4	2	8	22	60
5	4	14	45	46
6	4	15	48	85
7	3	11	33	120
8	2	12	51	80
9	6	4	63	113
10	2	18	140	
Average	3.6	12.6	57.0	77.4444
SME	0.4522	1.4	10.8433	8.4131

Unit expressed as pmol/mg protein/min

Table C6 Hepatic microsomal PROD activity of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	2	4.	14	23
2	0.544	2	17	22
3	1	7	51	23
4	0.9939	4	11	21
5	2	6	21	13
6	1	4	13	58
7	1	4	16	44
8	0.562	5	15	25
9	0.758	1	17	32
10	0.5045	4	59	
Average	1.0362	4.1	23.4	29.0
SME	0.1729	0.5467	5.3670	4.6128

Unit expressed as pmol/mg protein/min

Table C7 Hepatic microsomal aniline 4-hydroxylase activity of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	0.0876	0.0401	0.1647	0.0517
2	0.0547	0.0526	0.0304	0.0095
3	0.0526	0.0925	0.0851	0.0375
4	0.0330	0.0836	0.0282	0.0564
5	0.0603	0.0758	0.0330	0.0168
6	0.0215	0.0179	0.0146	0.0137
7	0.0254	0.0107	0.0145	0.0235
8	0.0103	0.0145	0.0116	0.0210
9	0.0248	0.0136	0.0145	0.0207
10	0.0248	0.0113	0.0326	
Average	0.0395	0.0413	0.0429	0.0279
SME	0.0074	0.0103	0.0151	0.0056

Unit expressed as nmol/mg protein/min

Table C8 Hepatic microsomal erythromycin N-demethylase activity of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	0.9259	0.7538	0.7640	0.6274
2	0.9208	0.7285	0.8196	0.9036
3	1.0364	0.7843	0.7115	0.6050
4	0.7787	0.8123	0.6498	0.6946
5	0.6386	0.7227	0.6106	0.6218
6	0.7675	0.9117	0.6890	0.6778
7	1.1155	0.7315	0.8473	0.7315
8	1.1825	0.9936	0.7802	1.3070
9	1.4280	1.2183	1.3393	1.2425
10	1.1134	1.4119	0.6583	
Average	0.9907	0.9069	0.7870	0.8235
SME	0.0737	0.0748	0.0660	0.0904

Unit expressed as nmol/mg protein/min

Appendix D

Clinical blood chemistry

Table D1 AST concentration of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	-	253	203	-
2	268	208	242	301
3	215	278	215	176
4	178	174	242	185
5	198	192	216	210
6	134	-	132	-
7	228	-	-	168
8	142	140	-	220
9	194	98	-	203
10	133	150	108	
Average	187.7778	186.6250	194.0	209.0
SME	15.3756	21.0314	20.0321	16.8805

Unit expressed as U/L

Missing value (-) was due to blood insufficiency

Table D2 ALT concentration of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	-	44	66	-
2	55	43	50	52
3	38	47	38	56
4	41	34	52	42
5	42	85	43	96
6	39	-	40	-
7	52	-	-	52
8	40	41	-	66
9	53	40	-	47
10	55	90	91	
Average	46.1111	53.0	54.2857	58.7143
SME	2.4633	7.6579	7.0802	6.8268

Unit expressed as U/L

Missing value (-) was due to blood insufficiency

Table D3 Serum ALP concentration of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	-	117	77	-
2	70	87	88	112
3	60	76	81	235
4	112	67	84	68
5	49	82	58	284
6	49	-	80	-
7	63	-	-	88
8	63	96	-	149
9	64	80	-	158
10	74	136	153	-
Average	67.1111	92.6250	88.7143	156.2857
SME	6.2593	8.1546	11.3089	29.6734

Unit expressed as U/L

Missing value (-) was due to blood insufficiency

Table D4 Serum total bilirubin concentration of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	-	0.1	0.2	-
2	0.1	0.1	0.1	0.5
3	0.1	0.1	0.1	0.1
4	0.1	0.1	0.1	0.1
5	0.1	0.1	0.2	0.2
6	0.1	-	0.1	-
7	0.1	-	-	0.1
8	0.1	0.1	-	0.4
9	0.1	0.1	-	0.1
10	0.1	0.1	0.1	
Average	0.1	0.1	0.1286	0.2143
SME	0.0	0.0	0.0184	0.0633

Unit expressed as mg/dl

Missing value (-) was due to blood insufficiency

Table D5 Serum direct bilirubin concentration of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	-	0.0	0.1	-
2	0.0	0.0	0.1	0.4
3	0.1	0.0	0.0	0.0
4	0.1	0.0	0.0	0.0
5	0.0	0.0	0.2	0.1
6	0.0	-	0.0	-
7	0.0	-	-	0.1
8	0.0	0.0	-	0.3
9	0.0	0.0	-	0.0
10	0.0	0.0	0.0	-
Average	0.0222	0.0	0.0571	0.1286
SME	0.0147	0.0	0.0297	0.0606

Unit expressed as mg/dl

Missing value (-) was due to blood insufficiency

Table D6 Serum total Protein concentration of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	-	7.0	7.1	-
2	6.6	6.5	7.0	6.9
3	6.7	6.9	7.2	5.9
4	7.3	6.9	7.3	7.6
5	6.6	7.5	6.9	5.8
6	6.9	-	7.3	-
7	6.6	-	-	7.2
8	7.3	7.1	-	7.0
9	7.0	7.0	-	7.3
10	7.1	7.1	7.8	
Average	6.9	7.0	7.2286	6.8143
SME	0.0972	0.0982	0.1107	0.2632

Unit expressed as g/dl

Missing value (-) was due to blood insufficiency

Table D7 Serum albumin concentration of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	-	3.7	4.1	-
2	3.7	3.9	4.2	3.8
3	3.6	3.9	4.2	2.8
4	3.9	4.0	4.0	4.3
5	3.3	4.4	4.1	2.5
6	3.8	-	4.3	-
7	3.7	-	-	4.2
8	4.3	3.8	-	3.5
9	3.6	3.5	-	3.9
10	3.7	4.0	4.5	-
Average	3.7333	3.9	4.2	3.5714
SME	0.0897	0.0926	0.0617	0.2598

Unit expressed as g/dl

Missing value (-) was due to blood insufficiency

Table D8 Serum globulin concentration of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	-	3.3	3.0	-
2	2.9	2.6	2.8	3.1
3	3.1	3.0	3.0	3.1
4	3.4	2.9	3.3	3.3
5	3.3	3.1	2.8	3.3
6	3.1	-	3.0	-
7	2.9	-	-	3.0
8	3.0	3.3	-	3.5
9	3.4	3.5	-	3.4
10	3.4	3.1	3.3	
Average	3.1667	3.1	3.0286	3.2429
SME	0.0707	0.0982	0.0778	0.0685

Unit expressed as g/dl

Missing value (-) was due to blood insufficiency

Table D9 BUN concentration of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	26	22	36	50
2	27	55	41	27
3	25	20	27	39
4	19	23	28	21
5	16	41	28	17
6	27	-	38	-
7	26	-	-	23
8	19	42	-	22
9	22	17	-	44
10	22	24	22	
Average	22.9	30.5	31.4286	30.375
SME	1.2333	4.8292	2.6173	4.3257

Unit expressed as mg/dl

Missing value (-) was due to blood insufficiency

Table D10 SCr concentration of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	0.6	0.7	0.8	0.9
2	0.6	1.2	0.9	0.7
3	0.7	0.7	0.9	1.
4	0.6	0.7	0.8	0.8
5	0.7	1.0	0.7	0.6
6	0.7	-	1.1	-
7	0.9	-	-	0.7
8	0.6	0.9	-	0.6
9	0.7	0.6	-	0.9
10	0.6	0.6	0.6	
Average	0.67	0.8	0.8286	0.775
SME	0.03	0.0756	0.0606	0.0526

Unit expressed as mg/dl

Missing value (-) was due to blood insufficiency

Table D11 Serum glucose concentration of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	84	92	81	90
2	100	100	89	79
3	102	86	85	69
4	131	90	89	80
5	68	71	54	86
6	74	-	91	-
7	78	-	-	91
8	104	100	-	-
9	65	71	-	-
10	114	101	125	
Average	92.0	88.875	87.7143	82.5
SME	6.8329	4.3360	7.8580	3.3739

Unit expressed as mg/dl

Missing value (-) was due to blood insufficiency

Table D12 Serum total cholesterol concentration of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	52	46	45	-
2	45	45	51	106
3	54	50	50	50
4	82	50	54	50
5	46	50	64	48
6	50	-	50	-
7	63	-	-	79
8	72	50	-	80
9	45	66	-	53
10	50	51	50	
Average	55.9	51.0	52.0	66.5714
SME	3.9650	2.2756	2.2361	8.4059

Unit expressed as mg/dl

Missing value (-) was due to blood insufficiency

Table D13 Serum TG concentration of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	88	73	58	115
2	63	66	70	116
3	67	68	76	48
4	53	57	56	51
5	48	64	52	47
6	54	-	68	-
7	49	-	-	46
8	66	57	-	57
9	46	56	-	59
10	50	80	117	
Average	58.4	65.125	71.0	67.375
SME	4.0803	3.0145	8.3181	10.6284

Unit expressed as mg/dl

Missing value (-) was due to blood insufficiency

Table D14 Serum HDL-C concentration of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	-	42	17	36
2	43	40	47	72
3	52	26	41	33
4	73	50	53	45
5	48	24	60	47
6	44	-	46	-
7	55	-	-	69
8	64	22	-	67
9	43	62	-	51
10	31	44	17	
Average	50.3333	38.75	40.1429	52.5
SME	4.1699	4.9416	6.3861	5.3519

Unit expressed as mg/dl

Missing value (-) was due to blood insufficiency

Table D15 Serum LDL-C concentration of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	-	3	3	4
2	2	2	2	8
3	2	1	2	3
4	6	2	2	3
5	2	1	3	4
6	2	-	2	-
7	2	-	-	3
8	2	3	-	4
9	2	2	-	3
10	2	3	4	
Average	2.4444	2.125	2.5714	4.0
SME	0.4444	0.2950	0.2974	0.5976

Unit expressed as mg/dl

Missing value (-) was due to blood insufficiency

Table D16 Serum sodium concentration of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	-	175	144	-
2	159	165	166	174
3	149	155	150	145
4	144	146	147	149
5	146	153	148	148
6	151	-	149	-
7	150	-	-	149
8	148	150	-	146
9	144	143	-	141
10	145	148	148	
Average	148.4444	154.375	150.2857	150.2857
SME	1.5733	3.7793	2.7143	4.0925

Unit expressed as mEq/L

Missing value (-) was due to blood insufficiency

Table D17 Serum potassium concentration of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	-	4.6	4.9	-
2	4.2	4.4	4.9	6.4
3	4.7	4.9	4.7	4.8
4	4.1	3.8	4.2	5.2
5	3.7	4.0	3.9	5.3
6	3.8	-	4.8	-
7	4.9	-	-	4.6
8	4.5	4.4	-	6.5
9	4.7	4.2	-	5.0
10	4.7	6.3	5.1	
Average	4.3667	4.575	4.6429	5.4
SME	0.1443	0.2743	0.1631	0.2854

Unit expressed as mEq/L

Missing value (-) was due to blood insufficiency

Table D18 Serum calcium concentration of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	-	11.2	9.7	-
2	10.3	10.9	10.9	11.1
3	9.5	9.9	9.5	9.8
4	9.7	9.5	9.9	10.7
5	9.9	10.1	9.6	10.3
6	10.4	-	10.6	-
7	10.3	-	-	10.5
8	10.4	10.3	-	10.2
9	9.8	10.2	-	10.1
10	9.7	10.5	10.2	
Average	10.1	10.325	10.0571	10.3857
SME	0.1167	0.1916	0.2010	0.1610

Unit expressed as mg/dl

Missing value (-) was due to blood insufficiency

Table D19 Serum chloride concentration of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	-	129	99	-
2	117	123	122	126
3	111	112	109	102
4	110	106	107	105
5	108	107	107	111
6	109	-	106	-
7	112	-	-	109
8	111	110	-	110
9	108	107	-	106
10	108	109	104	
Average	110.4444	112.875	107.7143	109.8571
SME	0.9590	2.9966	2.6701	2.9393

Unit expressed as mEq/L

Missing value (-) was due to blood insufficiency

Table D20 Serum estradiol concentration of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	80.7	620	711	-
2	79.4	362	595	2,042
3	82.6	312	706	2,309
4	113	323	713	776
5	77.8	295	-	1,533
6	111	-	594	-
7	183	-	-	1,170
8	76.6	410	-	475
9	137	242	-	963
10	216	217	454	
Average	115.71	347.625	628.8333	1324.0
SME	15.5191	44.5513	41.9185	253.7608

Unit expressed as pmol/L

Missing value (-) was due to blood insufficiency

Appendix E

Hematology

Table E1 Hct of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	47	39.8	45	43
2	45	46	43	43
3	43	42	44	41
4	42	47	20	43
5	45	50	50	44
6	45	-	45	-
7	44	-	-	46
8	53	48	-	-
9	44	37	-	-
10	44	48	44	
Average	45.2	44.725	41.5714	43.3333
SME	0.9638	1.6226	3.6959	0.6667

Unit expressed as %

Missing value (-) was due to blood insufficiency

Table E2 Hb of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	14.9	12.7	13.6	13.0
2	15.2	14.6	14.4	15.2
3	14.1	13.4	14.1	13.1
4	14	15.3	6.5	14.2
5	14.4	15.8	15.7	13.0
6	14.8	-	14.0	-
7	14.4	-	-	14.6
8	14.6	13.0	-	-
9	14.1	12.0	-	-
10	14.6	15.7	14.9	
Average	14.51	14.0625	13.3143	13.85
SME	0.1224	0.5210	1.1648	0.3879

Unit expressed as g/dl

Missing value (-) was due to blood insufficiency

Table E3 RBC count of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	8.22	7.40	7.55	7.58
2	7.80	7.89	7.67	7.50
3	7.60	7.62	7.96	7.44
4	7.68	9.04	3.60	7.74
5	7.46	8.60	8.68	7.62
6	7.74	-	7.80	-
7	6.74	-	-	7.22
8	7.62	7.02	-	-
9	7.70	6.60	-	-
10	7.88	8.62	8.22	
Average	7.644	7.8487	7.3543	7.5167
SME	0.1192	0.3012	0.6420	0.0727

Unit expressed as million cells/cumm

Missing value (-) was due to blood insufficiency

Table E4 MCV of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	57.3	53.7	59.1	56.5
2	57.3	57.7	56.0	54.5
3	56	55.6	54.8	55.1
4	54.2	52.1	54.5	55.8
5	60.0	58.3	57	56.0
6	58.7	-	57.2	-
7	65.0	-	-	63.7
8	70.1	68.4	-	-
9	57.7	56.4	-	-
10	56.0	56.2	54.1	
Average	59.23	53.3	56.1	56.9333
SME	1.5213	1.7386	0.6775	1.3834

Unit expressed as fL

Missing value (-) was due to blood insufficiency

Table E5 MCH of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	18.1	17.1	18.0	17.2
2	19.4	18.5	18.8	18.0
3	18.6	17.6	17.7	17.6
4	18.9	16.9	18.0	18.3
5	19.4	18.3	18.0	17.6
6	19.1	-	18.0	-
7	21.4	-	-	20.2
8	19.2	18.5	-	-
9	18.4	18.1	-	-
10	18.5	18.2	18.1	
Average	19.10	17.9	18.0857	18.15
SME	0.2910	0.2212	0.1280	0.4380

Unit expressed as pg

Missing value (-) was due to blood insufficiency

Table E6 MCHC of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	31.6	31.9	30.5	30.4
2	33.9	32.1	33.6	33.0
3	33.1	31.6	32.3	32.0
4	33.6	32.4	33.1	32.9
5	32.3	31.5	31.6	31.5
6	32.5	-	31.5	-
7	32.9	-	-	31.7
8	27.3	27.1	-	-
9	31.8	32.1	-	-
10	33.0	32.4	33.5	
Average	32.2	31.3875	32.3	31.9167
SME	0.5908	0.6235	0.4402	0.3945

Unit expressed as g/dl

Missing value (-) was due to blood insufficiency

Table E7 RBC morphology of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	Normal	Normal	Normal	Normal
2	Normal	Normal	Normal	Normal
3	Normal	Normal	Normal	Normal
4	Normal	Normal	Normal	Normal
5	Normal	Normal	Normal	Normal
6	Normal	-	Normal	-
7	Normal	-	-	Normal
8	Normal	Normal	-	-
9	Normal	Normal	-	-
10	Normal	Normal	Normal	

Table E8 Platelet count of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	776	792	925	879
2	967	863	980	990
3	918	990	970	968
4	934	1,298	432	1,110
5	816	946	1,166	880
6	762	-	976	-
7	632	-	-	818
8	768	778	-	-
9	710	844	-	-
10	1,020	970	958	
Average	830.3000	935.1250	915.2857	940.8333
SME	39.2445	58.9647	85.8028	42.5773

Unit expressed as10^3 cells/cumm

Missing value (-) was due to blood insufficiency

Table E9 WBC count of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	502	1,236	831	649
2	2,990	1,830	639	1,888
3	1,204	1,178	1,164	4,540
4	2,600	1,480	598	1,254
5	594	698	1,618	940
6	934	-	1,128	-
7	660	-	-	1,040
8	1,020	1,040	-	-
9	346	1,026	-	-
10	942	566	856	
Average	1179.2	1131.75	976.2857	1718.5
SME	282.9383	143.2812	134.7387	589.2257

Unit expressed as cells/cumm

Missing value (-) was due to blood insufficiency

Table E10 Neutrophil of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	14	84	27	16
2	11	12	22	30
3	25	22	27	39
4	20	13	12	20
5	30	30	14	14
6	25	-	17	-
7	20	-	-	21
8	22	22	-	-
9	30	31	-	-
10	18	35	37	
Average	21.5	31.1250	22.2857	23.3333
SME	1.9791	8.0986	3.3217	3.8615

Unit expressed as %

Missing value (-) was due to blood insufficiency

Table E11 Eosinophil of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	3	3	0	1
2	2	1	3	1
3	0	0	0	0
4	0	0	0	0
5	1	2	1	0
6	2	-	0	-
7	2	-	-	1
8	1	0	-	-
9	0	0	-	-
10	0	0	0	
Average	1.1	0.75	0.5714	0.5
SME	0.3480	0.4119	0.4286	0.2236

Unit expressed as %

Missing value (-) was due to blood insufficiency

Table E12 Lymphocyte of individual rat

Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	82	11	69	81
2	84	85	73	70
3	73	75	70	54
4	75	85	85	75
5	66	64	82	72
6	68	-	82	-
7	75	-	-	75
8	73	74	-	-
9	65	67	-	-
10	80	64	60	
Average	74.10	65.6250	74.4286	71.1667
SME	2.0680	8.3451	3.4007	3.7543

Unit expressed as %

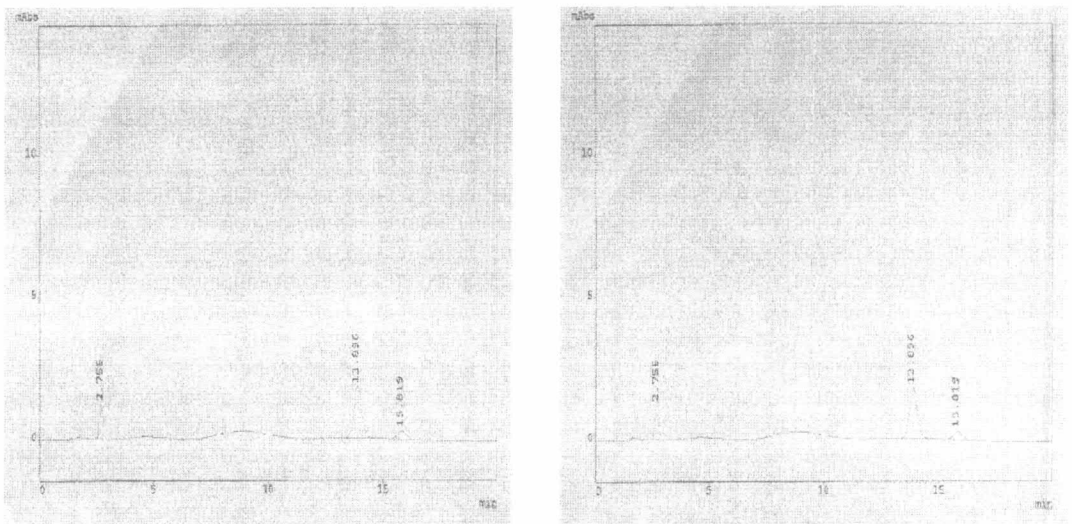
Missing value (-) was due to blood insufficiency

Table E13 Monocyte of individual rat

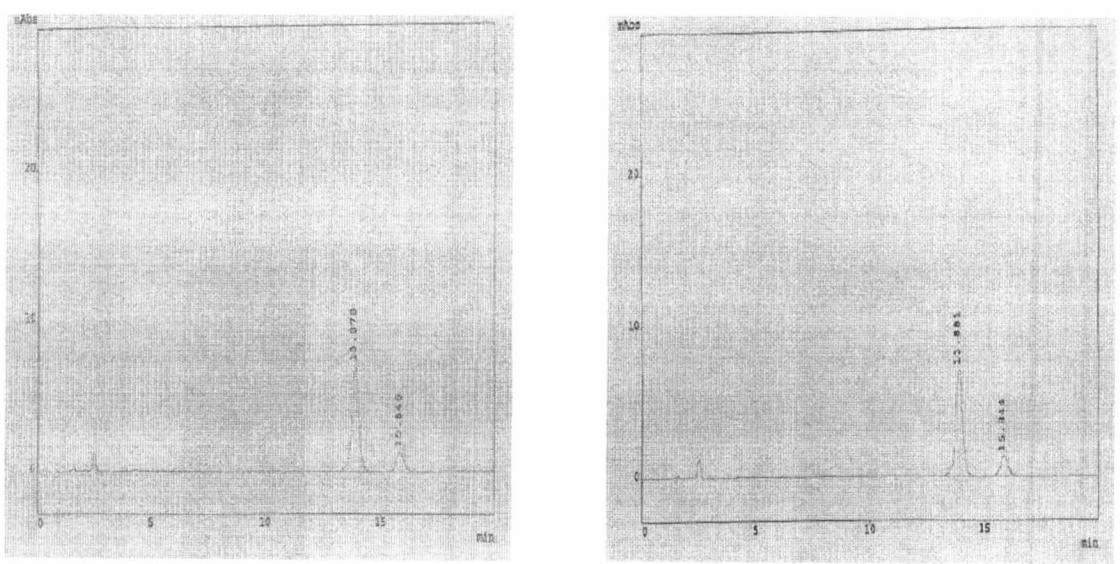
Rat No.	Group			
	Control	*C. comosa* group I	*C. comosa* group II	*C. comosa* group III
1	1	2	4	2
2	2	2	2	3
3	2	3	3	7
4	5	2	3	5
5	3	4	3	2
6	5	-	1	-
7	3	-	-	3
8	4	4	-	-
9	5	2	-	-
10	2	1	3	
Average	3.20	2.50	2.7143	3.6667
SME	0.4667	0.3780	0.3595	0.8028

Unit expressed as %

Missing value (-) was due to blood insufficiency

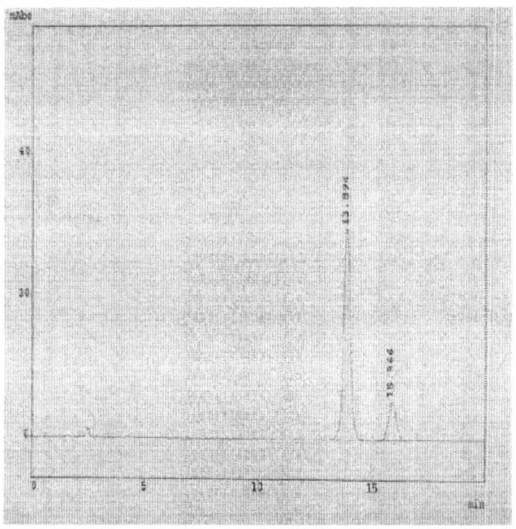


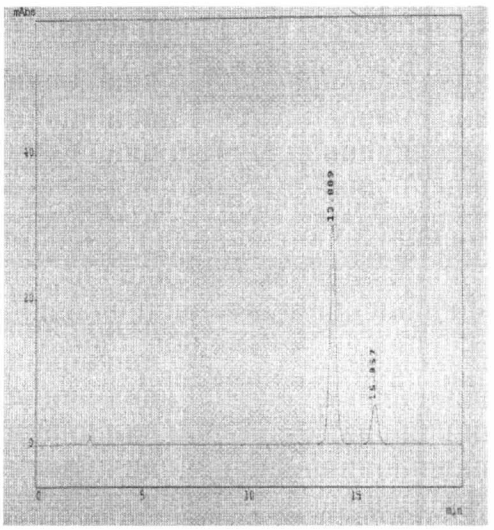
0.5 mg/50ml



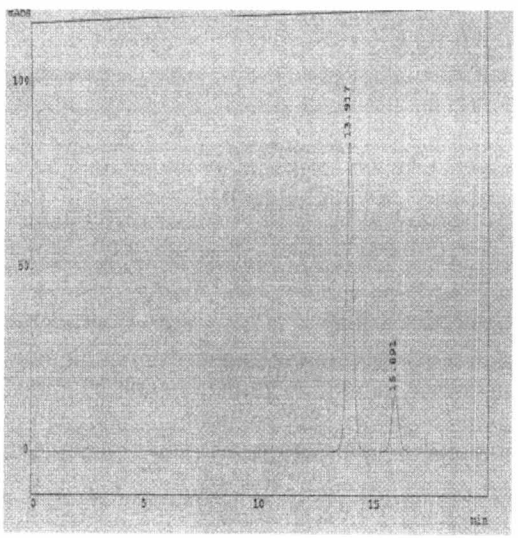
1 mg/50ml

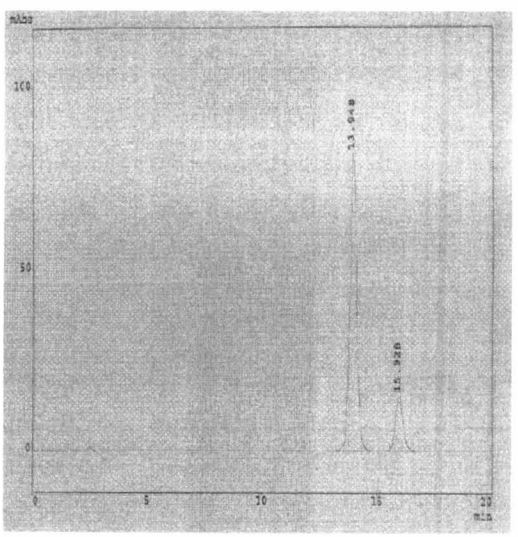
Figure 14 Chromatogram of 1,7 diphenyl-4,6-heptadiene-3-ol





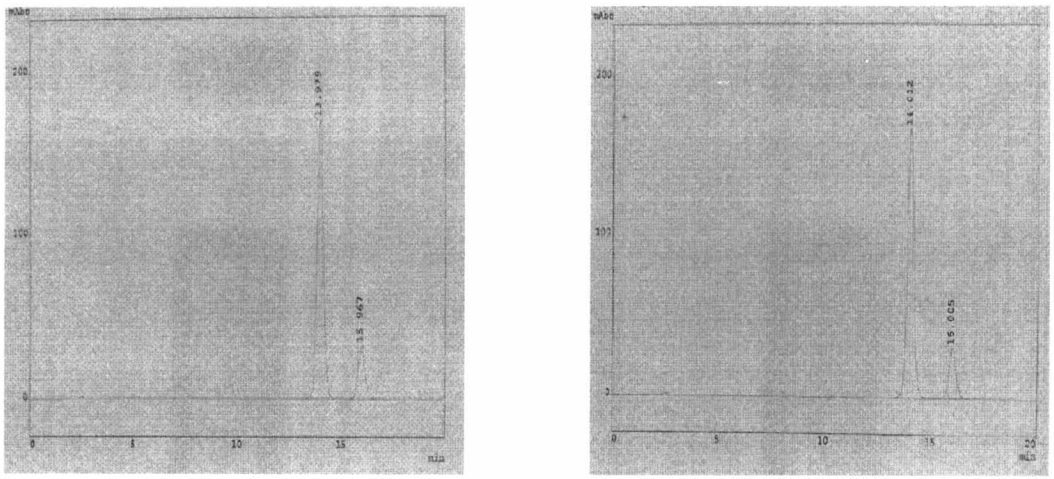
1.5 mg/50ml





2 mg/50ml

Figure 14 (con't) Chromatogram of 1,7 diphenyl-4,6-heptadiene-3-ol



2.5 mg/50ml

Figure 14 (con't) Chromatogram of 1,7 diphenyl-4,6-heptadiene-3-ol

NO. 13/ 2005

Study Protocol Approval

The Ethics Committee of the Faculty of Pharmaceutical Sciences, Chulalongkorn University, Bangkok, Thailand has approved the following study to be carried out according to the protocol dated and/ or amended as follows :

Study Title : EFFECTS OF CURCUMA COMOSA ETHANOLIC EXTRACT ON HEPATIC CYTOCHROME P450 AND CLINICAL BLOOD CHEMISTRY IN RATS

Study Code : -

Centre : Chulalongkorn University

Principal Investigator : MISS WANIDA SUKNOY

Protocol Date : January 20, 2005

A list of the Ethics Committee members and positions present at the Ethics Committee meeting on the date of approval of this study has been attached.

This Study Protocol Approval Form will be forwarded to the Principal Investigator.

Chairman of Ethics Committee : .....

(Boonyong Tantisira, Ph.D.)

Secretary of Ethics Committee : .....

(Somratai Vadcharavivad, Pharm.D.)

Date of Approval : January 20, 2005

Figure 15 Study Protocol Approval by Ethic Committee of the Faculty of Pharmaceutical Sciences, Chulalongkorn University, Bankok, Thailand.

Table E14 Normal lab values of rats (Gad and Chengelis, 1992)

Parameter	Lab values	Units
Albumin	2.7-5.1	mg/dl
ALP	39-216	U/L
ALT	25-55	U/L
AST	60-300	U/L
BUN	5-29	mg/dl
Calcium	7.2-13.9	mg/dl
Chloride	100-110	mEq/L
Eosinophil	0-4	%
Globulin	1.8-3.0	mg/dl
Glucose	50-135	mg/dl
Hematocrit	42.5-49.4	%
Hemoglobin	13.4-17.2	g/dl
Lymphocyte	65-84.5	%
MCV	54-67.5	fl
MCH	17-21.8	Pg
MCHC	26-35.5	g/dl
Monocyte	0-5	%
Platelet count	500-1300	$X10^3$ cell/cumm
PMN	11.5-41.6	%
Potassium	4.0-7.0	mEq/L
Sodium	143-156	mEq/L
SCr	0.2-0.8	mg/dl
Total bilirubin	0.0-0.55	mg/dl
Total cholesterol	40-130	mg/dl
Total protein	4.7-8.15	mg/dl

CURRICULUM VITAE

Miss Wanida Suknoy was born in December 24, 1980 in Nakornsrithommarat, Thailand. She graduated with a Bachelor Degree of Nursing in 2003 from the Faculty of Nursing, Prince of Songkla University. Songkhla, Thailand.