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APPENDIXES

Table 13 Effect of curcumininds on AST level in chronic ethanol stimulated rats

Treatment	Rat No.						Average	SD.
	1	2	3	4	5	6		
Control	28.6	18.4	28.6	19.2	28.9	47.0	28.5	10.3
Glucose	37.6	13.4	30.0	27.1	36.2	31.1	29.2	8.7
Alc	44.3	49.6	47.2	45.0	43.8	48.3	46.4	5.6
Alc+ CMC	41.2	65.5	48.1	41.2	43.8	46.7	47.8	9.1
Alc+Silymarin	51.7	61.1	37.6	39.4	60.1	47.0	49.5	10.0
Alc+ Cur 250	40.5	30.0	42.7	45.9	57.9	-	43.4	10.1
Alc+ Cur500	30.4	44.5	33.3	27.1	32.9	-	33.6	6.5
Alc + Cur 750	22.8	28.2	31.5	29.7	30.7	47.8	31.8	8.4

Note: Some missing data points are related to the technical problem from blood collection from the rat tail.

Table 14 Effect of curcumininds on ALT level in chronic ethanol stimulated rats

Treatment	Rat No.						Average	SD.
	1	2	3	4	5	6		
Control	28.6	18.4	28.6	19.2	28.9	-	24.7	5.4
Glucose	30.7	22.1	27.9	18.4	25.3	19.2	23.9	4.9
Alc	34.1	41.2	38.2	38.1	32.5	42.7	37.8	8.0
Alc+ CMC	31.8	21.3	23.9	23.2	36.5	47.0	30.6	9.9
Alc+Silymarin	22.1	32.2	20.6	21.0	39.1	38.0	28.8	8.7
Alc+ Cur 250	31.8	27.1	36.9	37.6	42.3	-	35.2	5.8
Alc+ Cur500	28.2	28.6	33.6	18.1	17.7	38.7	27.5	8.4
Alc + Cur 750	22.8	28.2	31.5	29.7	30.7	-	28.6	3.5

Note: Some missing data points are related to the technical problem from blood collection from the rat tail.

Table 15 Effect of curcumininds on LDH level in chronic ethanol stimulated rats

Treatment	Rat No.						Average	SD.
	1	2	3	4	5	6		
Control	464.5	332.2	250.7	379.9	-	-	356.8	89.4
Glucose	378.4	164.6	81.5	76.9	396.8	238.4	222.8	141.0
Alc	427.9	398.1	341.4	292.8	287.0	371.4	338.5	146.0
Alc+ CMC	355.3	292.2	243.0	276.8	444.5	-	322.4	79.5
Alc+Silymarin	364.5	386.1	330.7	175.3	350.7	-	321.5	84.1
Alc+ Cur 250	430.7	236.9	321.5	336.8	243.0	-	251.9	112.4
Alc+ Cur 500	196.9	403.0	330.7	124.6	204.6	-	313.8	79.3
Alc + Cur 750	164.6	167.6	95.4	264.5	209.2	-	180.3	62.4

Note: Some missing data points are related to the technical problem from blood collection from the rat tail.

Table 16 Effect of curcumininds on ALP level in chronic ethanol stimulated rats

Treatment	Rat No.						Average	SD.
	1	2	3	4	5	6		
Control	167.5	199.9	203.3	168.2	187.5	-	185.3	17.0
Glucose	143.4	137.9	220.6	171.6	148.2	157.1	163.1	30.5
Alc	193.7	215.9	224.1	186.1	164.0	193.7	196.6	59.7
Alc+ CMC	202.6	179.2	199.2	172.3	223.3	-	195.3	20.3
Alc+Silymarin	181.3	133.0	168.2	122.7	142.7	-	149.6	24.5
Alc+ Cur 250	167.5	199.9	203.3	168.2	187.5	-	195.3	20.3
Alc+ Cur 500	202.6	179.2	199.2	172.3	223.3	-	185.3	17.0
Alc + Cur 750	181.3	133.0	168.2	122.7	142.7	-	149.6	24.5

Note: Some missing data points are related to the technical problem from blood collection from the rat tail.

Table 17 The effect of curcuminoids on MDA levels in liver microsomal extract form ethanol-induced toxicity rats

Group of rats	MDA levels (μM)						Mean±S.D.
	No.1	No.2	No.3	No.4	No.5	No.6	
Control	3.16	3.17	3.16	2.69	3.28	3.25	3.12±0.22
Alc+CMC	3.69	3.57	3.00	3.38	2.48	3.27	3.23±0.44
Alc+silymarin	3.31	3.34	2.62	3.15	1.32	2.83	2.76±0.76
Glucose	2.96	2.87	2.78	2.37	2.58	2.54	2.68±0.22
Alc+Cur 250	0.59	2.38	2.13	0.63	2.82	2.02	1.76±0.93
Alc+Cur 500	2.78	1.42	1.94	0.57	1.51	1.43	1.61±0.73
Alc+Cur 750	2.62	0.93	3.26	2.78	1.72	1.11	2.07±0.95

Table 18 The effect of curcuminoids on SOD activity in liver microsome extract from ethanol-induced toxicity rats

Group of rats	SOD activity (% Inhibition)						Mean±S.D.
	No.1	No.2	No.3	No.4	No.5	No.6	
Control	73.4	82.9	79.3	77.9	74.5	76.4	77.4±3.5
Alc+CMC	70.1	75.5	88.3	74.6	72.8	75.1	76.1±6.3
Alc+silymarin	75.5	74.6	78.8	84.3	84.4	81.0	79.8±4.2
Glucose	77.6	78.6	83.1	82.2	86.2	80.5	81.4±3.1
Alc+Cur250	76.3	81.5	82.5	86.5	79.7	79.9	81.1±3.4
Alc+Cur500	75.8	88.9	84.3	66.7	73.8	80.9	78.4±7.9
Alc+Cur750	77.5	77.9	82.1	81.8	86.6	59.6	77.6±9.4

Table 19 The cell viability of HepG2 cells treated with various concentration of ethanol

EtOH (%V/V)	% Cell viability					Mean±S.D.
	1	2	3	4	5	
Control	100.0	100.0	100.0	100.0	100.0	100.0±0
2.5	88.8	88.5	85.9	88.5	93.2	89.0±2.6
5	68.8	64.5	77.2	67.2	72.4	70.0±4.9
5.5	56.0	53.2	49.1	51.7	52.4	52.5±2.5
6	20.3	10.8	15.3	22.6	25.6	18.9±5.9
6.5	18.1	9.3	8.6	9.9	10.6	11.3±3.9
7	16.1	8.9	8.0	9.3	8.8	10.2±3.3
7.5	18.5	8.7	8.4	9.0	9.4	10.8±4.3

Table 20 The cell viability of HepG2 cells treated with various concentrations of curcuminoids

Curcuminoids(μg/ml)	% Cell viability			Mean±S.D.
	1	2	3	
Control	100.0	100.0	100.0	100.0±0.0
DMSO	104.6	87.4	88.5	93.5±9.7
0.156	104.8	80.0	85.0	89.9±13.1
0.0313	95.5	95.4	88.8	93.2±3.8
0.625	92.4	90.0	93.0	91.8±1.6
1.25	94.0	87.6	96.5	92.7±4.6
2.5	105.0	104.2	103.5	104.2±0.8
5	102.6	103.2	82.1	96.0±12.0

Table 21 The effect of curcuminoids on cell viability in ethanol stimulated HepG2 cells

Conditions	% Cell viability				Mean±S.D
	1	2	3	4	
Control	100.0	100.0	100.0	100.0	100.0±0.0
0.5%DMSO	86.0	92.3	96.9	97.4	93.1±5.5
5.5% ethanol	63.8	58.9	64.2	57.0	61.0±3.0
0.156+Alc	75.2	78.6	60.6	74.4	72.2±9.5
0.313+Alc	71.6	78.1	63.7	83.1	74.1±7.2
0.625+Alc	78.8	75.6	76.6	80.7	77.9±1.6
1.25+Alc	69.3	72.1	77.1	77.4	74.0±4.0
2.5+Alc	74.4	75.5	69.0	88.8	76.9±3.5
5+Alc	71.2	74.5	62.9	82.7	72.8±6.0

Table 22 The effect of various concentration of ethanol on LDH release in HepG2 cells

Ethanol (%V/V)	LDH (Ratio of control)			Mean±S.D.
	1	2	3	
Control	1.00	1.00	1.00	1.0±0.0
2.5	1.30	1.13	1.50	1.3±0.2
5	2.30	1.25	2.20	1.9±0.6
5.5	3.30	2.13	2.30	2.6±0.6
6	4.80	2.38	2.60	3.3±1.3
6.5	6.70	5.38	2.50	4.9±2.1
7	6.30	6.13	4.80	5.7±0.8
7.5	7.30	6.13	5.00	6.1±1.2

Table 23 The effect of various concentrations of curcuminoids on LDH release in HepG2 cell

Curcuminoids (μg/ml)	LDH (Ratio of control)			Mean±S.D.
	1	2	3	
Control	1.00	1.00	1.00	1.0±0
DMSO	1.00	1.13	1.17	1.1±0.1
0.156	0.88	1.13	1.17	1.1±0.2
0.313	0.75	1.00	1.17	1.0±0.2
0.625	0.88	1.00	1.17	1.0±0.2
1.25	0.75	0.88	1.00	0.9±0.2
2.5	0.75	1.00	1.17	1.0±0.2
5	0.88	0.88	1.00	0.9±0.1

Table 24 The effect of curcuminoids on LDH release in ethanol stimulated HepG2 cells

Conditions	LDH (Ratio of control)			Mean±S.D
	1	2	3	
Control	1.00	1.00	1.00	1.0±0.0
0.5%DMSO	2.18	1.15	1.17	1.5±0.6
5.5%ethanol	2.73	2.23	1.75	2.2±0.5
0.156+Alc	1.91	1.31	1.17	1.5±0.4
0.313+Alc	2.00	1.62	1.42	1.7±0.3
0.625+Alc	1.73	1.54	1.42	1.6±0.2
1.25+Alc	2.00	1.46	1.42	1.6±0.3
2.5+Alc	2.00	1.54	1.42	1.7±0.3
5+Alc	1.36	1.31	1.25	1.3±0.1

Table 25 The effect of ethanol on lipid peroxidation in HepG2 cells

EtOH (%v/v)	MDA(μM) level				Mean±S.D.
	1	2	3	4	
Control	0.61	1.96	0.74	0.88	1.0±0.6
2.5	1.81	3.35	2.22	2.39	2.4±0.7
5	4.22	4.66	3.69	5.87	4.6±0.9
5.5	5.02	5.19	3.79	6.23	5.1±1.0
6	5.05	5.15	4.37	6.31	5.2±0.8
6.5	4.77	4.56	3.58	6.21	4.8±1.1
7	4.33	6.43	4.55	5.17	5.1±0.9
7.5	5.04	6.08	4.06	3.48	4.7±1.1

Table 26 The effect of curcuminoids on lipid peroxidation in ethanol stimulated HepG2 cells

Condition	MDA (μM) level					Mean±S.D.
	1	2	3	4	5	
Control	1.32	2.30	2.45	3.13	1.64	2.2±0.7
0.5% DMSO	1.35	1.79	3.23	3.06	1.78	2.2±0.8
5.5% Alc	4.08	4.09	5.67	5.37	4.51	4.7±0.7
0.156+Alc	5.04	4.70	5.65	4.75	5.65	5.2±0.5
0.313+Alc	4.57	4.45	5.12	4.77	4.67	4.7±0.3
0.625+Alc	2.29	3.74	4.32	4.21	5.02	3.9±1.0
1.25+Alc	2.49	3.57	3.42	3.87	3.85	3.4±0.6
2.5+Alc	2.30	3.12	3.49	3.39	3.77	3.2±0.6
5+Alc	0.96	1.95	2.08	2.06	0.76	1.6±0.6

Table 27 The effect of ethanol on nitric oxide (NO) production in HepG2 cells

Ethanol (%v/v)	Fluoresence/ % mg protein									Mean±S.D.
	1	2	3	4	5	6	7	8	9	
Control	598.7	748.7	449.9	439.4	444.1	661.9	692.4			576.4±131.2
2.5	1291.3	1318.6	1213.6	938.3	1042.2	933.5	1005.5	1343.6	1207.1	1143.8±164.7
5	636.5	739.8	1190.6	686.7	1402.9	1217.6	896.6	1504.1	1185.8	1051.2±320.1
5.5	1044.9	942.2	984.2	610.3	794.6	1224.4	673.0	1154.7		928.5±220.4
6	1702.9	1229.8	1251.8	3132.9	3800.2	4374.8				2582.1±1369
6.5	4110.7	3619.8	3204.4	1085.1	1613.6	3677.3	3356.8			2952.5±1141.6
7	2445.1	2291.5	2512.2	1990.0	1239.1	3121.2	4627.1	3597.3		2727.9±1041.7
7.5	4143.6	3357.4	2015.5	2799.3	2477.5	3916.4	3752.8	4001.8		3308±790.0

Table 28 The effect of curcuminoids on nitric oxide (NO) production in ethanol stimulated HepG2 cells

Conditions	Fluorescence/ % mg protein					
	1	2	3	4	5	6
Control	745.2	744.1	1117.2	1192.7	899.9	1189.4
DMSO	997.7	785.3	888.5	1093.9	1037.2	1266.6
7.5%Alc	3748.9	2731.5	2243.4	3651.3	2763.5	3007.4
0.156+Alc	2729.4	1988.6	1268.8	1644.3	1369.7	1039.2
0.313+Alc	1851.7	1632.3	2354.3	1668.5	2694.2	2937.4
0.625+Alc	3378.6	2890.5	2495.8	3105.3	3461.6	2601.0
1.25+Alc	3640.7	3092.0	3015.7	3183.8	2611.4	2069.2
2.5+Alc	3691.0	2152.9	3853.9	2542.6	3011.2	2688.3
5+Alc	3952.6	3949.0	3807.6	3614.5	2399.3	2453.6

Table 28 (cont.)

Conditions	Fluorescence/ % mg protein					
	7	8	9	10	11	Mean±S.D.
Control	896.2	1118.1	1107.2	907.8		991.8±173.6
DMSO	1080.8	1259.1	1110.0	978.1	1046.3	1049.42±141.9
7.5%Alc	2063.7	2350.9	2501.0	2249.2	2252.2	2687.5±572.8
0.156+Alc	1604.2	1451.5	2787.8	1678.1		1756.2±587.0
0.313+Alc	2890.3	2124.6	1547.1	1543.7	2139.9	2125.8±531.1
0.625+Alc	2839.3	2967.4				2967.4±340.5
1.25+Alc	2508.9	2820.3	2116.8	2026.4	2285.4	2670±527.7
2.5+Alc	3876.9	2425.1	2905.6	2860.9	2308.9	2937.9±615.9
5+Alc	3439.1	2239.6	2697.9	2544.0		3109.7±702.9

BIOGRAPHY

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Name-Surname Ruttiya Thongrung

Date of Birth January 28, 1985

Address 116/4 M.1, Tumbon. Neangum
Amphur Bangratum, Phitsanulok Province
65210

Education Background

2007 B.S. (Biomedical Sciences) Naresuan University, Phitsanulok, Thailand