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APPENDIX

APPENDIX A Approval of Animal Ethics Clearances Naresuan University Animal Ethics Committee

เอกสารรับรองโครงการวิจัยในสัตว์ทดลอง
คณะกรรมการจรรยาบรรณการใช้สัตว์ทดลอง มหาวิทยาลัยนเรศวร

ชื่อโครงการ การใช้โปรตีโอมิคส์ในการวิเคราะห์การเปลี่ยนแปลงของโปรตีนในตับหนูจากผลของสมุนไพรตรีกฎก
The Proteomic analyses of rat livers affected by Trikatu

ชื่อหัวหน้าโครงการ รศ.ดร สุธาทิพ ยะโสธรศรีกุล

เลขที่โครงการ/รหัส 52 04 0017

สังกัดหน่วยงาน/คณะ วิทยาศาสตร์การแพทย์

การรับรอง ขอรับรองโครงการวิจัยดังกล่าวข้างบนนี้ ได้ผ่านการพิจารณาและรับรองจากคณะกรรมการจรรยาบรรณการใช้สัตว์ มหาวิทยาลัยนเรศวร ในการประชุมครั้งที่ 3/2552 วันที่ 21 ตุลาคม 2552

ลงนาม

(ศาสตราจารย์พิเศษ ดร กาญจนา เงารังษี)
ประธานคณะกรรมการจรรยาบรรณการใช้สัตว์ มหาวิทยาลัยนเรศวร

APPENDIX B Chemical reagents preparation

1. **Reagent for determination of the serum AST and ALT activity** (Guidelines on Standard Operating Procedures for CLINICAL CHEMISTRY, WHO)

1.1 AST substrate 100 ml

DL- aspartic acid	2.66 g
α-ketoglutarate	30 mg
1M NaOH	20.5 ml
Phosphate buffer	add to 100 ml

Adjust the pH to 7.4 by adding 1 M NAOH drop wise while stirring. Add 1 ml of chloroform as preservative that stable for 2 months when stored at 2-8° C. Discard if it becomes turbid.

1.2 ALT substrate 100 ml

DL-alanine	1.78 g
α-ketoglutarate	30 mg
0.4 M NaOH	1.25 ml
Phosphate buffer	add to 100 ml

Adjust the pH to 7.4 by adding 1 M NAOH drop wise while stirring. Add 1 ml of chloroform as preservative that stable for 2 months when stored at 2-8° C. Discard if it becomes turbid.

1.3 Color reagent 1 litre

2,4 dinitrophenylhydrazine (DNPH)	200 mg
1M HCI	add to 1 L

Stable for 6 months when stored at 2-8°C.

1.4 Sodium hydroxide (0.4M) 1 litre

NaOH	16 g
Deionized water (18 MΩ)	add to 1 L

Store in a polyethylene container at 25-35°C that stable for 6 months.

1.5 Pyruvate standard (2 mM/ml) 100 ml

Sodium pyruvate	220 mg
Phosphate buffer	add to 100 ml.

Dilute 10 ml of this solution to 100 ml with phosphate buffer to obtain the working standard containing 2 mM pyruvate per ml. The remaining 90 ml of the first solution should be discarded. The working standard should be stored in small aliquots of 2 ml in the freezer. One aliquot of working standard should be used for preparing a calibration graph. Discard the leftover standard in the vial.

1.6 Phosphate buffer (pH 7.4) 1 litre

Disodium hydrogen phosphate	14.9 g
Potassium dihydrogen phosphate	2.2g
Deionized water (18 MΩ)	add to 1L

Stable for 3 months when stored at 2-8° C.

2. Reagent for Protein extraction and precipitation

2.1 Phosphate buffered saline (PBS) (1X solution) 1 litre

Sodium chloride	8g
Potassium chloride	0.2g
Disodium hydrogen phosphate	1.44g
Potassium dihydrogen phosphate	0.24g
Distilled water(18 MΩ)	add to 1 L

Adjust pH to 7.4 and sterilize by autoclaving

2.2 Extraction media 100 ml

1.5 MTris-HCl, pH 8.8	11.66 ml
SDS	5 g
87% glycerol	17.24 ml
DTT	0.046 g
Deionized water (18 MΩ)	add to 100 ml

2.3 80% acetone 1 litre

100% Acetone	800 ml
Deionized water (18 MΩ)	add to 1 L

2.4 IEF extraction solution 100 ml

Urea (m.w. 60.06)	48.05 g
Thiourea (m.w. 76.12)	15.23 g
CHAPS	2 g
Triton X-100	2 ml
DTT	0.77 g
Deionized water (18 MΩ)	add to 100 ml

2.5 Trichloroacetic acid (72%) 10 ml

TCA	7.2 g
Deionized water (18 MΩ)	add to 10 ml

2.6 Deoxycholate (0.15%) 10 ml

DOC	15 mg
Deionized water (18 MΩ)	add to 10 ml

2.7 SDS (0.5%) 10 ml

10% SDS	0.5 ml
Deionized water (18 MΩ)	add to 10 ml

3. Reagent for Protein determination by Lowry assay

3.1 Alkaline copper solution

3.1.1 Solution A (10 ml)

CuSO4.7H20	40 mg
Sodium citrate dehydrate	100 mg
Deionized water (18 MΩ)	add to 10 ml

3.1.2 Solution B (100 ml)

Sodium carbonate	2 g
Sodium hydroxide	0.4 g
Deionized water (18 MΩ)	add to 100 ml

3.1.3 Solution C (51 ml)

Solution A	1ml
Solution B	50ml

3.2 Folin-Ciocalteu phenol reagent (20%) 20 ml

Folin-Ciocalteu phenol reagent	10 ml
Deionized water (18 MΩ)	10 ml

4. Reagent preparation for SDS-PAGE

4.1 SDS loading buffer (5X stock) 25 ml

1 M Tris-HCl, pH 6.8	3.25 ml
SDS	2.5 g
87% glycerol	12.5 ml
DTT (M.W. = 154.25)	1.925 g
Deionized water (18 MΩ)	8.75 ml
Bromophenol blue	0.006 g

4.2 electrophoresisbuffer (10X stock) 100 ml

Tris-base	3 g
Glycine	14 g
10% SDS	10 ml
Deionized water(18 MΩ)	add to100 ml

4.3 separating gel (12% polyacrylamide gel) 10 ml

1.5 M Tris-HCl, pH 8.8	2.5 ml
40% Acrylamide	3.0 ml
10% SDS	125 µl
Deionized water (18MΩ)	4.35 ml
Ammonium persulfate (APS)	50 µl
TEMED	5µl

4.4 stacking gel (4% polyacrylamide gel) 3 ml

0.5 M Tris-HCl, pH 6.8	0.75 ml
40% Acrylamide	0.3 ml
10% SDS	30 µl
Deionized water (18MΩ)	1.82 ml
Ammonium persulfate (APS)	50 µl
TEMED	5µl

5. Silver staining processes

5.1 Fixing solution 200 ml

99.8% Methanol	100 ml
100% Acetic acid	24 ml
37%Formaldehyde	100 µl
Deionized water (18 MΩ)	add to 200 ml

5.2 Washing solution 200 ml

96% Ethanol	73 ml
Deionized water (18 MΩ)	add to 200 ml

5.3 Sensitizing solution 200 ml

Sodium thiosulfate	0.04 g
Deionized water (18 MΩ)	add to 200 ml

5.4 Staining solution 200 ml

Silver nitrate	0.4 g
Deionized water (18 MΩ)	add to 200 ml

5.5 Developing solution 200 ml

Sodium carbonate	12 g
37% Formaldehyde	100 µl
0.02% sodium thiosulfate	4 ml
Deionized water (18 MΩ)	add to 200 ml

5.6 Stopping solution100 ml

Disodium, EDTA	1.4 g
Deionized water (18 MΩ)	add to 100 ml

Table 9 Gel staining protocol

Step	Processes	Reagent	time
1	Fix	fixing solution	30 min.
2	Wash	washing solution	2 X 5 min.
3	Sensitize	sensitizing solution	2 min.
4	wash	deionized water	2 X 5 min.
5	Stain	staining solution	20 min.
6	wash	deionized water	2 X 1 min.
7	Develop	developing solution	15 min. (max.) or completed visual band marker protein on gel
8	Stop	stopping solution	20 min.
9	wash	deionized water	3 X 5 min.

Gel can be stored in 5% acetic acid solution at 4°C for several weeks prior to in-gel digestion.

6. Reagent for In-gel trypsin digestion

6.1 Ammonium bicarbonate (10mM) 50 ml

Ammonium bicarbonate (m.w.79.056)	39.5 mg
Deionized water (18 MΩ)	add to 50 ml

6.2 Reducing solution 10 ml

DTT	15.42 mg
10 mMAmmonium bicarbonate	add to 10 ml

6.3 Alkylating solution 10 ml

Iodoacetamide (m.w. 184.96)	185 mg
10 mMAmmonium bicarbonate	add to 10 ml

6.4 50% acetonitrile /10mM ammonium bicarbonate 10 ml

100% acetonitrile	5 ml
10mM ammonium bicarbonate	5 ml

6.5 Trypsin solution (10 ng/µl) 1 ml

Trypsin	10 mg
50% acetonitrile /10mM ammonium bicarbonate	1 ml

6.6 Acetonitrile (30%) 10 ml

100% Acetonitrile	3 ml
Deionized water (18 MΩ)	7 ml

6.7 Acetonitrile (50%) 10 ml

100% Acetonitrile	5 ml
Deionized water (18 MΩ)	5 ml

6.8 Formic acid (0.1%) 5 ml

Formic acid	5 µl
Deionized water (18 MΩ)	add to 5 ml

6.9 Peptide extracts solution 10 ml

0.1 % Formic acid	5 ml
100% Acetonitrile	5 ml

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BIOGRAPHY

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