Supplementary Materials

Contents

1. Reference substances for fatty acid composition analysis

Reference substances used in the fatty acid composition analysis of *Sonneratia apetala* seed oil (SSO) were shown in Fig.1 and Tab.1. GLC MIXTURE 617 (C4 - C24, purity ≥ 98.0%) were purchased from Nu-Chek Prep, Inc (Minnesota, USA).

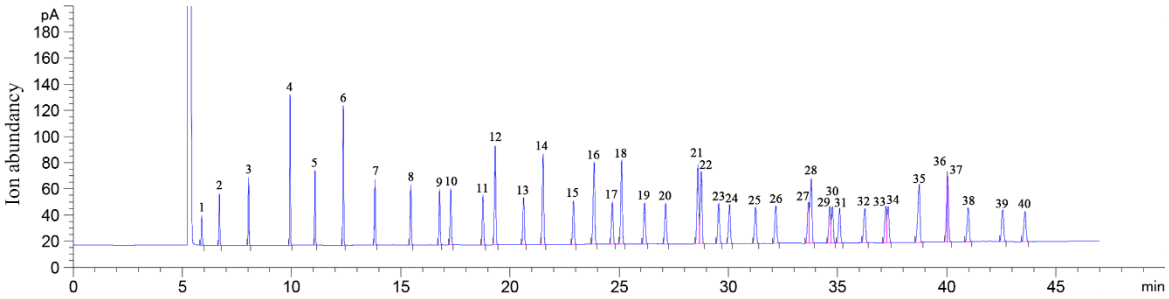


Fig.1 Total ion chromatogram of reference substances for fatty acid composition analysis

Tab.1 Reference substances for fatty acid composition analysis of *Sonneratia apetala* seed oil

Number	Retention time (min)	Molecular weight	Indetification	Wt. %
1	5.879	88.11	Butyrate, methyl ester	2
2	6.684	116.16	Hexanoate, methyl ester	2
3	8.024	144.21	Octanoate, methyl ester	2
4	9.922	172.26	Decanoate, methyl ester	4
5	11.065	186.29	Hendecanoate, methyl ester	2
6	12.357	200.32	Dodecanoate, methyl ester	4
7	13.809	214.34	Tridecanate, methyl ester	2
8	15.447	228.37	Tetradecanoate, methyl ester	2
9	16.766	226.35	(Z)-9-Tetradecenoate, methyl ester	2
10	17.281	242.40	Pentadecanoate, methyl ester	2
11	18.754	240.38	(Z)-10-Pentadecenoate, methyl ester	2
12	19.315	256.42	Hexadecanoate, methyl ester	4
13	20.616	254.41	(Z)-9-Hexadecenoate, methyl ester	2
14	21.508	270.45	Heptadecanoate, methyl ester	4
15	22.900	268.43	(Z)-10-Heptadecenoate, methyl ester	2

16	23.843	284.48	Octadecanoate, methyl ester	4
17	24.677	282.46	(E)-9-Octadecenoate, methyl ester	2
18	25.104	282.46	(Z)-9-Octadecenoate, methyl ester	4
19	26.155	280.44	(E,E)-9,12-Octadecadienoate, methyl ester	2
20	27.120	280.44	(Z,Z)-9,12-Octadecadienoate, methyl ester	2
21	28.598	278.44	(Z,Z,Z)-6,9,12-Octadecatrienoate, methyl ester	4
22	28.752	312.53	Eicosanoate, methyl ester	4
23	29.549	278.44	(Z,Z,Z)-9,12,15-Octadecatrienoate, methyl ester	2
24	30.044	310.52	(Z)-11-Eicosenoate, methyl ester	2
25	31.237	326.56	Heneicosanoate, methyl ester	2
26	32.166	308.53	(Z,Z)-11,14-Eicosadienoate, methyl ester	2
27	33.661	306.48	(Z,Z,Z)-8,11,14-Eicostrienoate, methyl ester	2
28	33.785	340.58	Docosanoate, methyl ester	4
29	34.640	306.48	(Z,Z,Z)-11,14,17-Eicostrienoate, methyl ester	2
30	34.754	304.47	(Z,Z,Z,Z)-5,8,11,14-Eicosatetraenoate, methyl ester	2
31	35.084	338.57	(Z)-13-Docosenoate, methyl ester	2
32	36.240	336.55	(Z,Z)-13,16-Docosaedienoate, methyl ester	2
33	37.206	354.61	Tricosanoate, methyl ester	2
34	37.306	302.45	(Z,Z,Z,Z,Z)-5,8,11,14,17-Eicosapentaenoate, methyl ester	2
35	38.729	368.64	Tetracosanoate, methyl ester	4
36	39.961	332.51	(Z,Z,Z,Z)-7,10,13,16-Docosatetraenoate, methyl ester	2
.37	40.026	366.62	(Z)-15-Teracosenoate, methyl ester	2
38	40.970	330.50	(Z,Z,Z,Z,Z)-4,7,10,13,16-Docosapentaenoate, methyl ester	2
39	42.550	330.50	(Z,Z,Z,Z,Z)-7,10,13,16,19-Docosapentaenoate, methyl ester	2
40	43.573	328.49	(Z,Z,Z,Z,Z,Z)-4,7,10,13,16,19-Docosahexaenoate, methyl ester	2

2. Identification of volatile components of SSO

2.1 Methods

SSO sample (100 μL) was extracted with 300 μL of n-hexane and 1 mL of acetonitrile under ultrasound for 20 min. Following centrifugation at 14000 × g for 10 min (4℃), supernatant was obtained, and the remains was extracted with 1 mL of acetonitrile for another 2 min. The upper extract was also harvested after centrifugation for 10 min (14000 × g, 4℃) and mixed with the previously collected supernatant for the GC-MS profiling. The yield of volatile components of SSO was 9.56%.

A total of 5 μL sample was separated with DB-wax GC-Column (30 m × 0.25 mm, 0.25 μm), carried by mixed gas of nitrogen and helium at flow rate of 1 mL/min. The temperature of column injector was maintained at 250°C and split ratio was set at 30:1. Oven temperature was held at 50℃ for 2 min and elevated to 280℃ at rate of 10°C/min and held for 20 min. The mass scan parameters were set as followings: electron impact ionization voltage 70 eV; ion source temperature 250°C; mass range 30 ~ 450 m/z.

2.2 Results

As shown in Fig.2 and Tab.2, the dominant volatile constituents of SSO were free fatty acids and related derivatives including linoleic acid, linoleic acid ethyl ester, (E)-2-heptenal, (E, E)-2,4-decadienal, palmitic acid, oleic acid, etc. Additionally, small amounts of terpenes including squalene, limonene and α-phellandrene were also found in SSO.

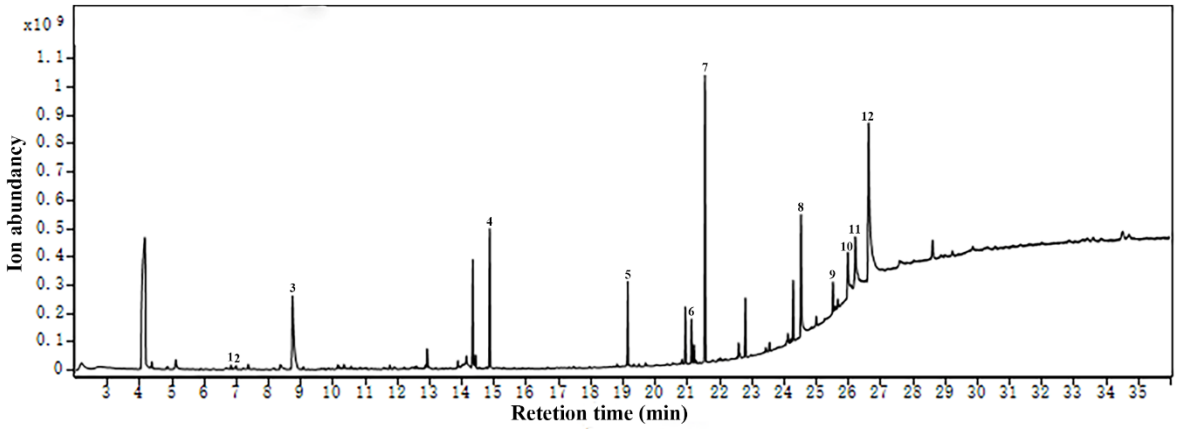


Fig.2 Total ion chromatogram of volatile organic components analysis

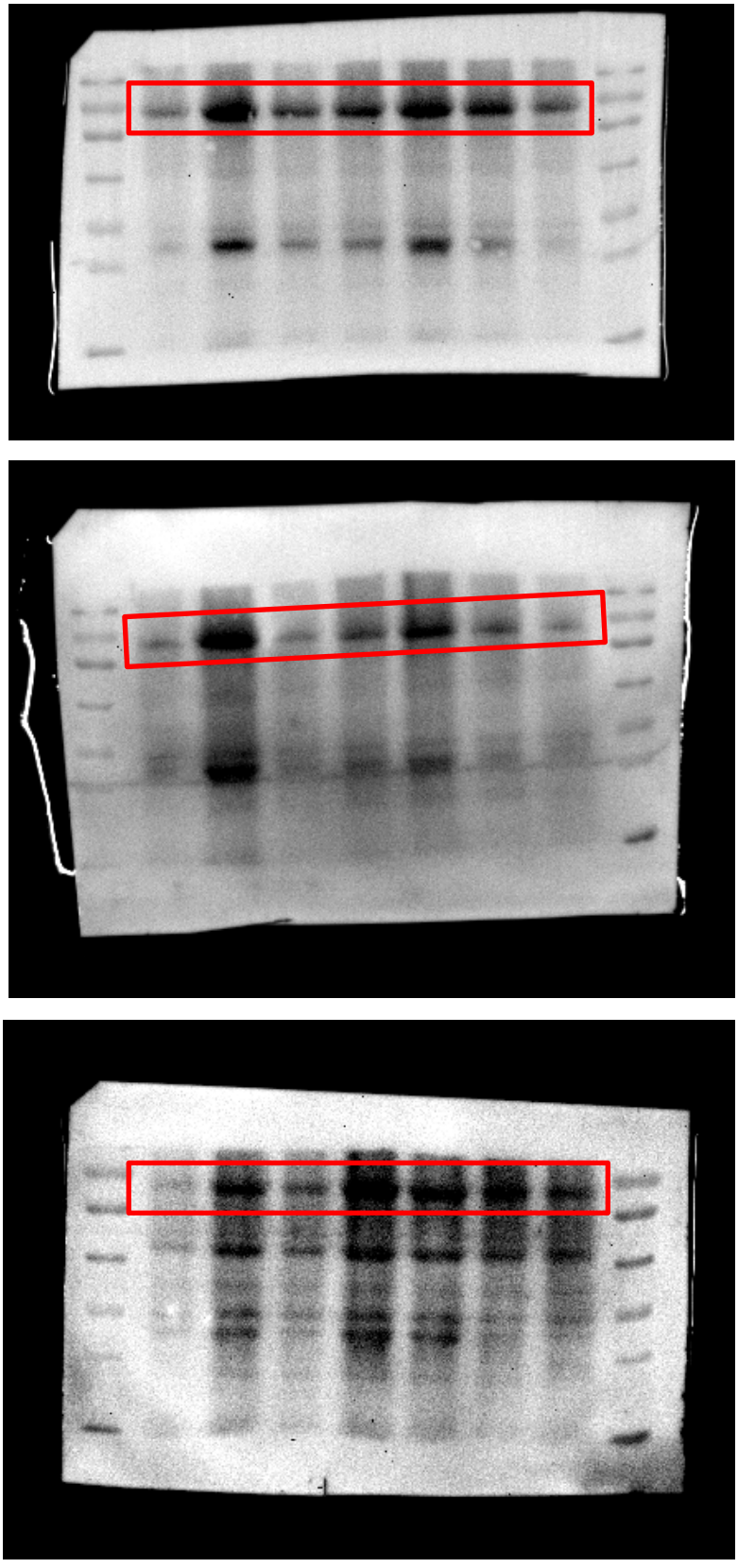
Tab. 2 Volatile organic components of *Sonneratia apetala* seed oil

Number	Retention time (min)	Molecular weight	Molecular formula	Indetification	% composition
1	6.829	136.23	$C_{10}H_{16}$	Limonene	0.12
2	6.982	136.23	$C_{10}H_{16}$	α-Phellandrene	0.12
3	8.734	112.17	$C_7H_{12}O$	(E)-2-Heptenal	5.25
4	14.858	152.23	$C_{10}H_{16}O$	(E, E)-2,4-Decadienal	4.74
5	19.148	284.48	$C_{18}H_{36}O_2$	Hexadecanoic acid ethyl ester	2.47
6	21.121	310.51	$C_{20}H_{38}O_2$	(E)-9-Octadecenoic acid ethyl ester	1.23
7	21.541	308.50	$C_{20}H_{36}O_2$	Octadecadienoic acid ethyl ester	9.25
8	24.519	256.42	$C_{16}H_{32}O_2$	n-Hexadecanoic acid	4.62
9	25.513	410.70	$C_{30}H_{50}$	Squalene	0.95
10	25.973	284.48	$C_{18}H_{36}O_2$	Octadecanoic acid	2.25
11	26.207	282.46	$C_{18}H_{34}O_2$	Octadecenoic acid	2.89
12	26.614	280.45	$C_{18}H_{32}O_2$	(Z, Z)-9,12-Octadecadienoic acid	12.64

3. Western blots uncropped images

3.1 GLUT9 (The band in the red frame is the target band)

Intact, Vehicle, BZM, FBX, 50 mg/kg of SSO, 100 mg/kg of SSO, 200 mg/kg of SSO



3.2 URAT1 (The band in the red frame is the target band)

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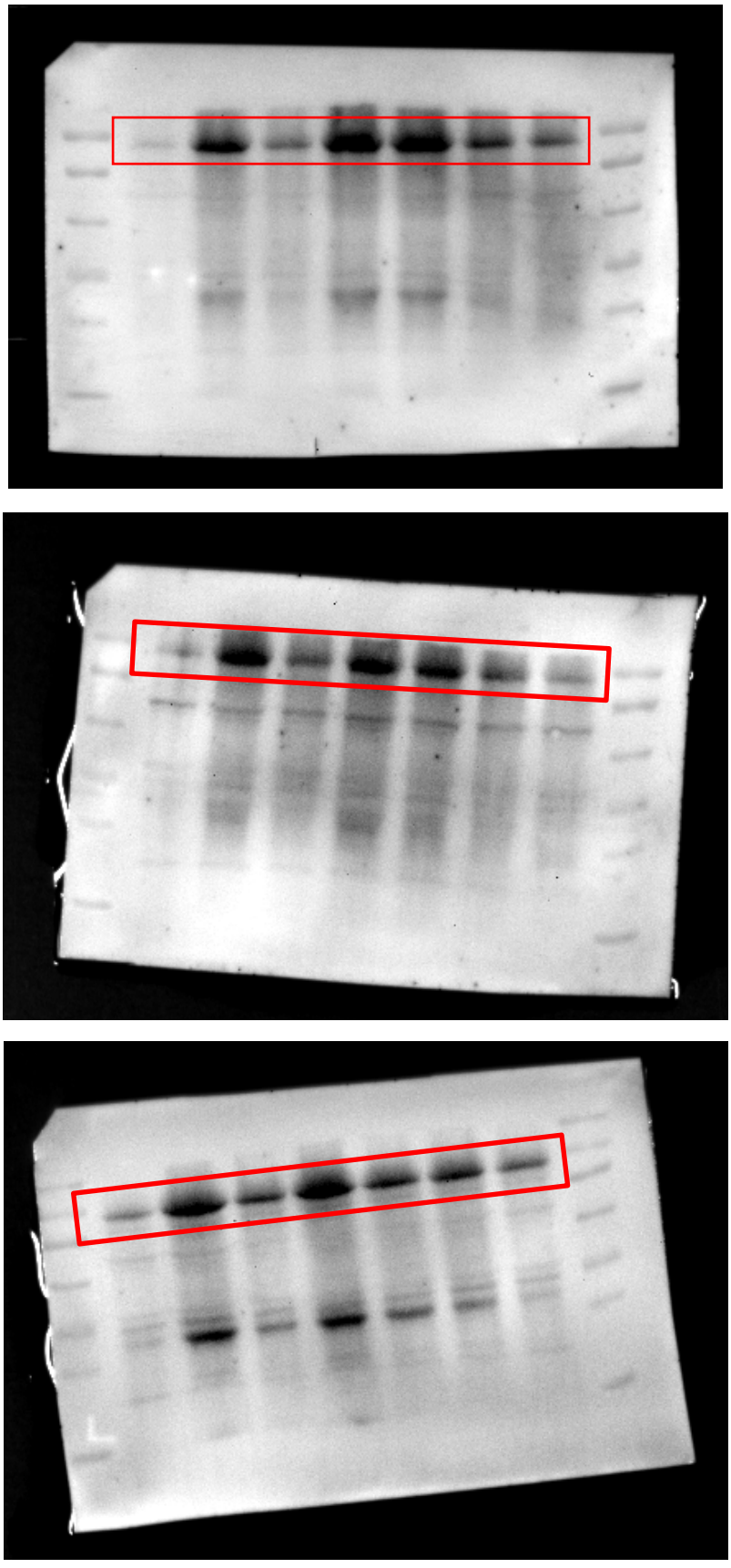

3.3 OAT1 (The band in the red frame is the target band)

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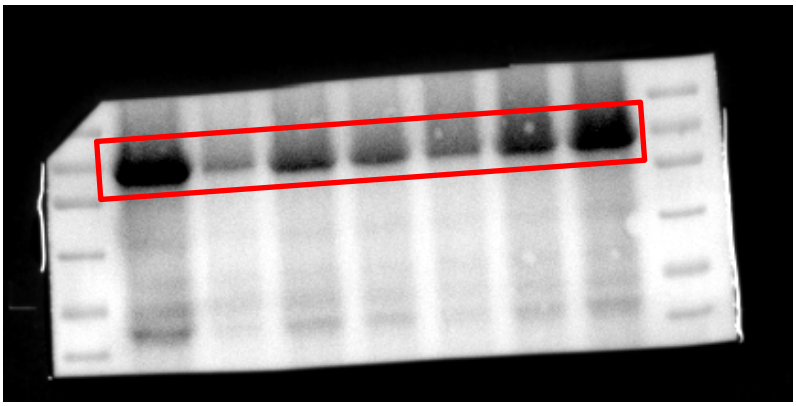
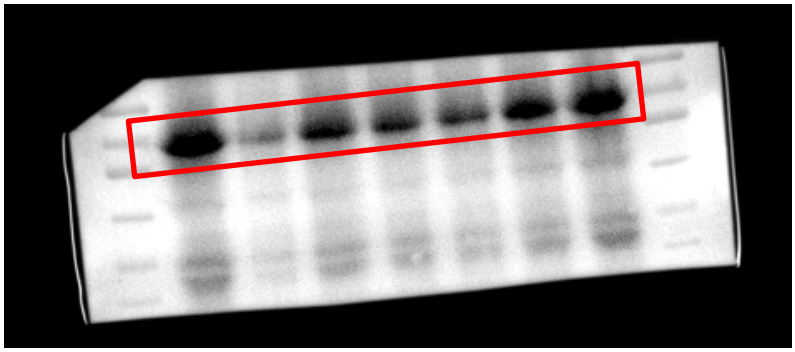
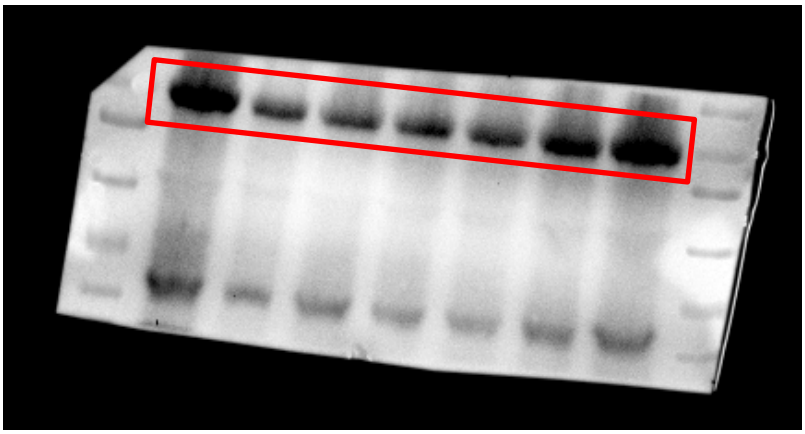
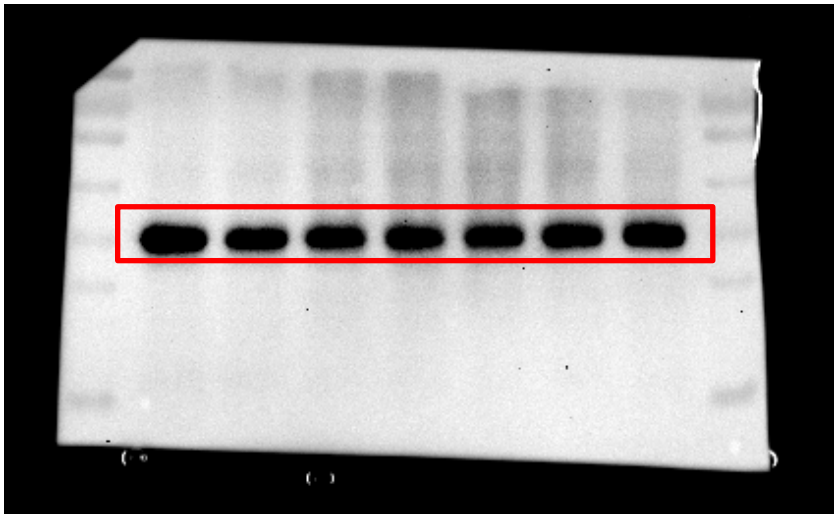


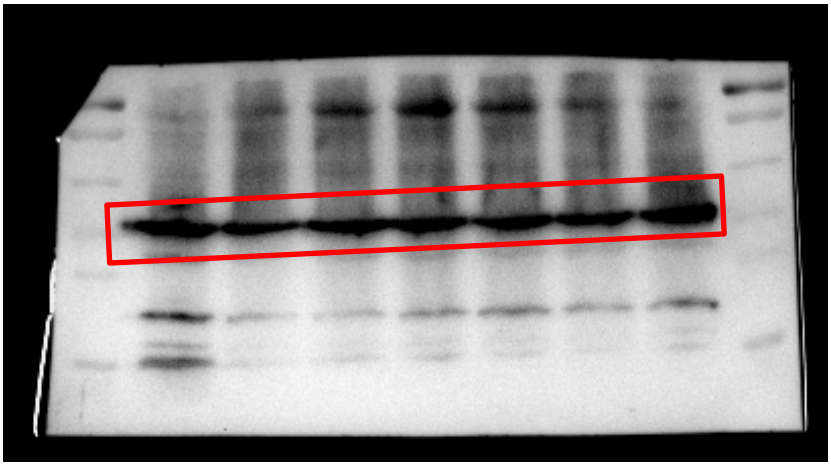


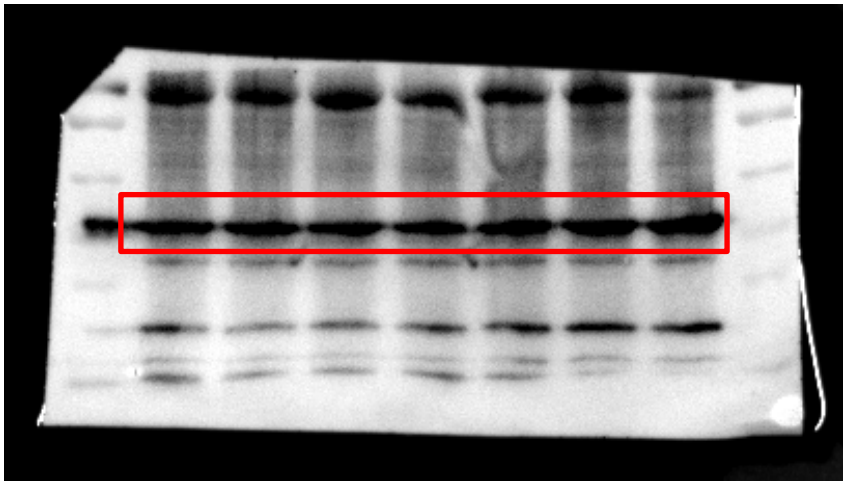


3.4 β-actin for GLUT9, URAT1 and OAT1 (The band in the red frame is the target band)

Intact, Vehicle, BZM, FBX, 50 mg/kg of SSO, 100 mg/kg of SSO, 200 mg/kg of SSO

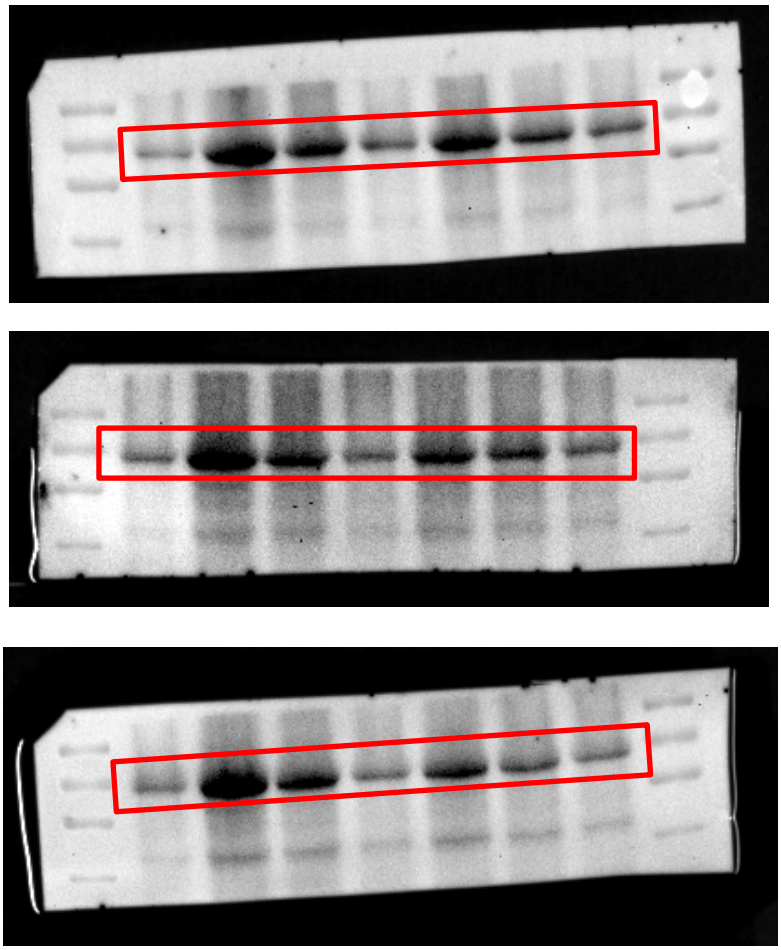






3.5 Cytosol Keap1 (The band in the red frame is the target band)

Intact, Vehicle, BZM, FBX, 50 mg/kg of SSO, 100 mg/kg of SSO, 200 mg/kg of SSO



3.6 Cytosol Nrf2 (The band in the red frame is the target band)

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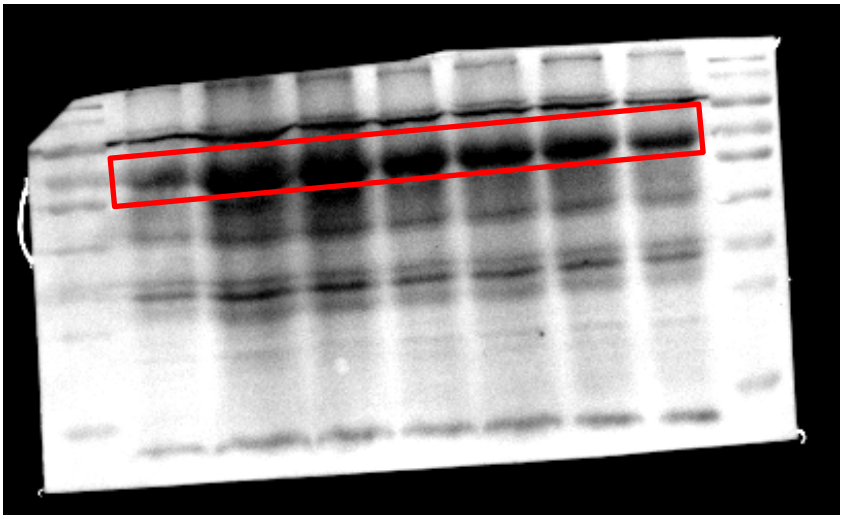
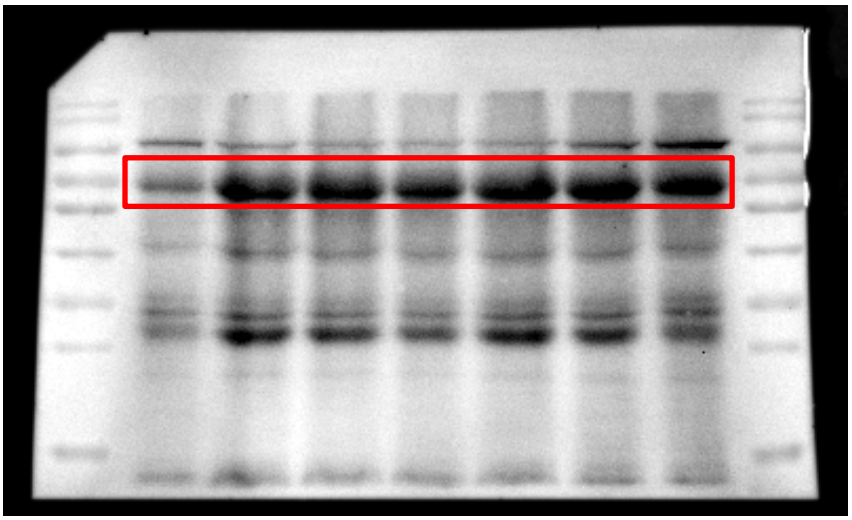
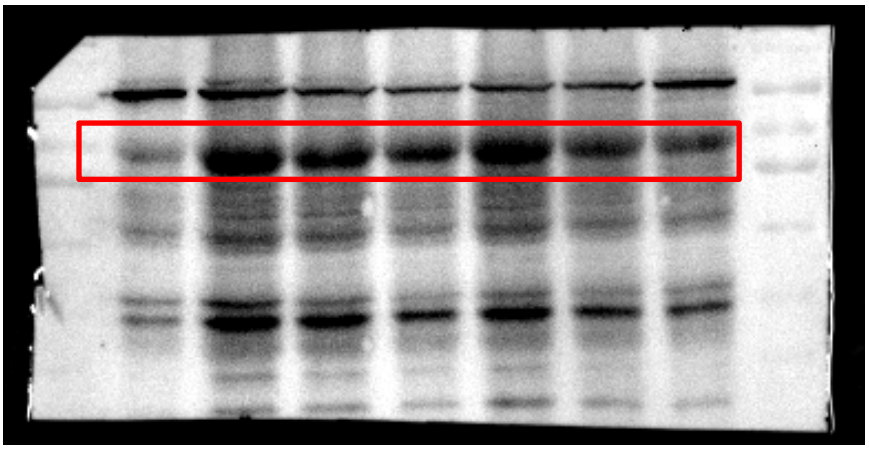
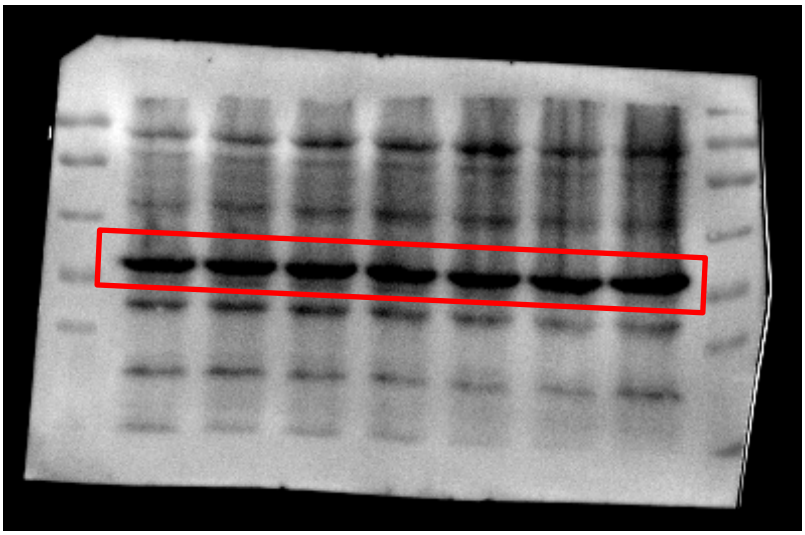


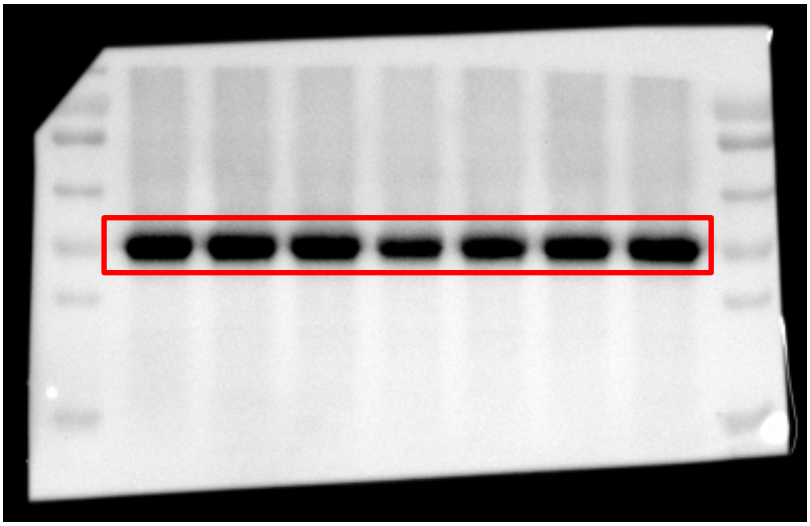


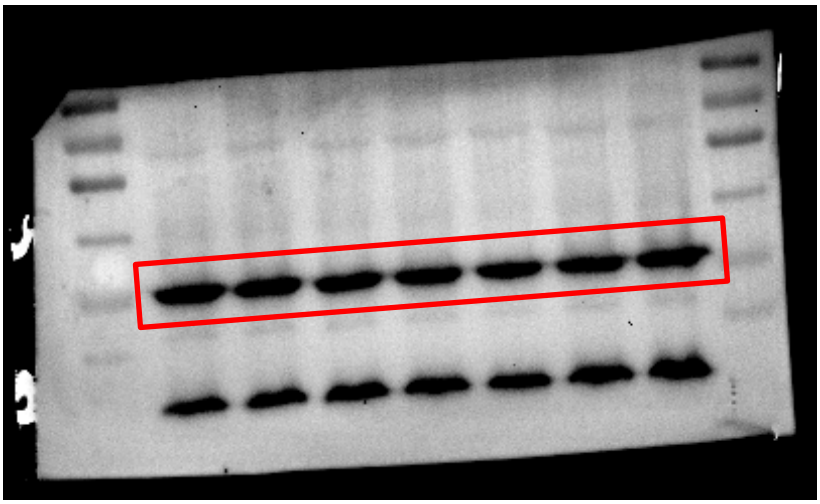


3.7 β-actin for cytosol Keap1 and Nrf2 (The band in the red frame is the target band)

Intact, Vehicle, BZM, FBX, 50 mg/kg of SSO, 100 mg/kg of SSO, 200 mg/kg of SSO

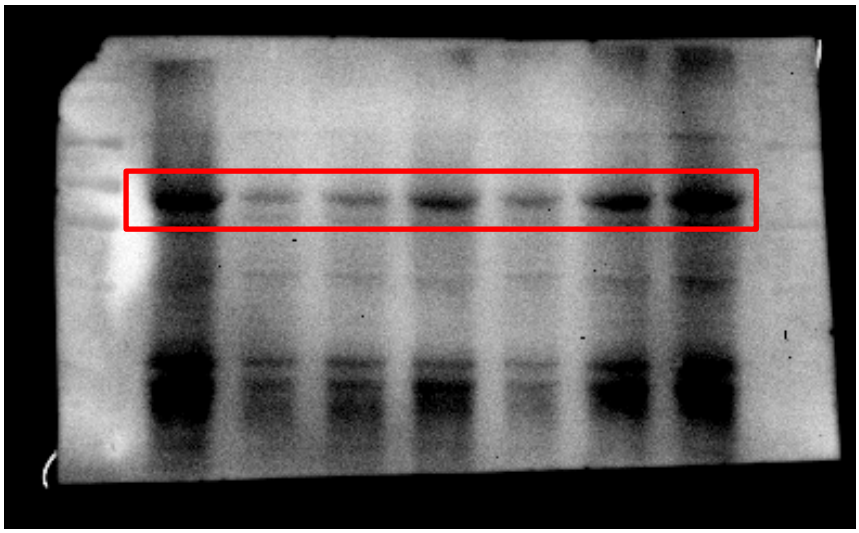


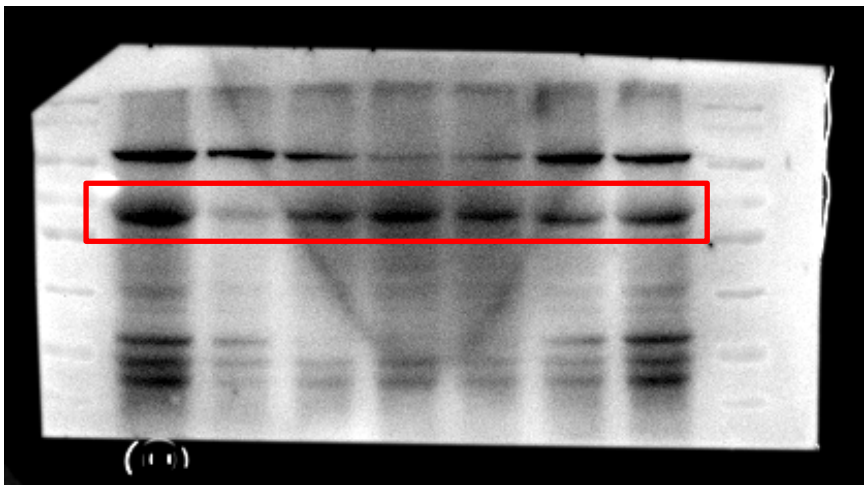


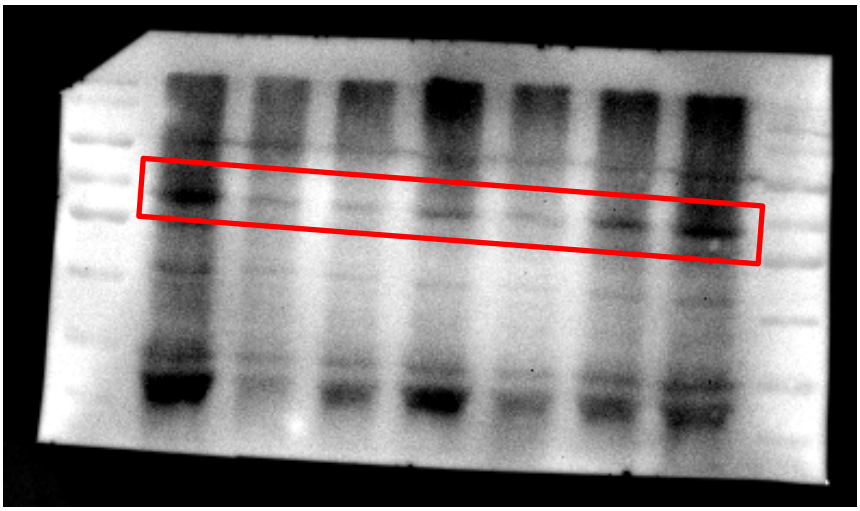


3.8 Nuclear Nrf2 (The band in the red frame is the target band)

Intact, Vehicle, BZM, FBX, 50 mg/kg of SSO, 100 mg/kg of SSO, 200 mg/kg of SSO







3.9 Histone H3 (The band in the red frame is the target band)

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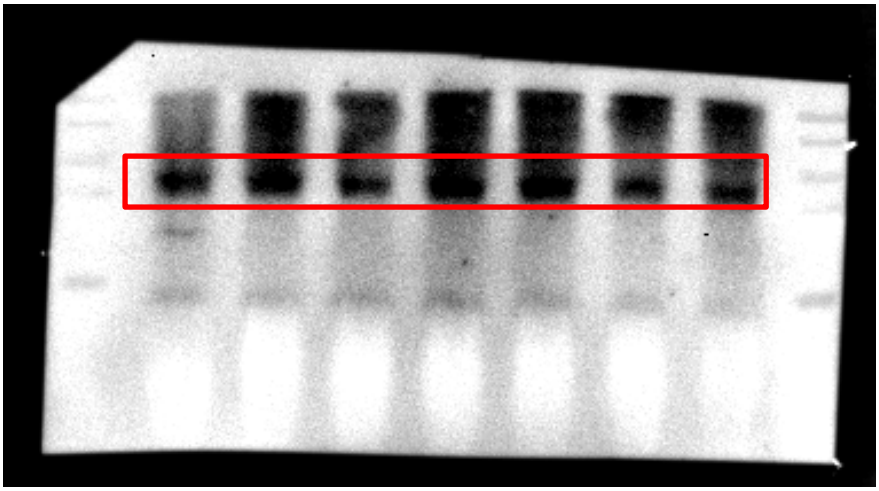
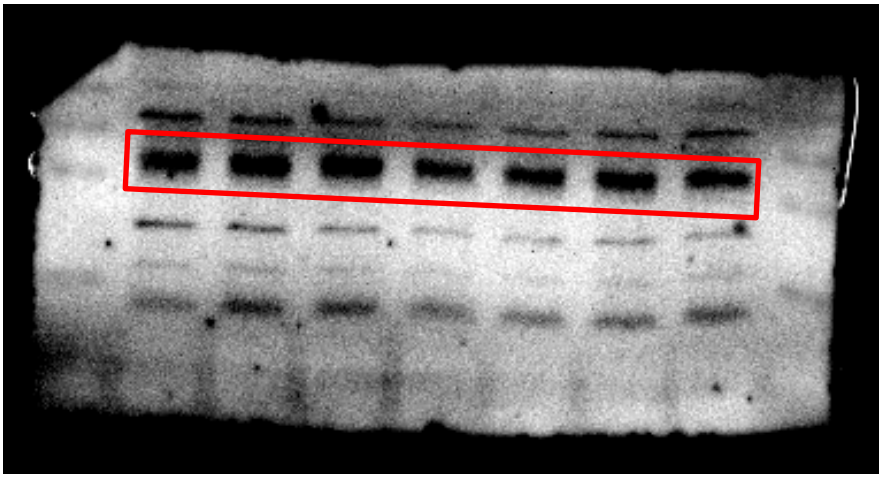
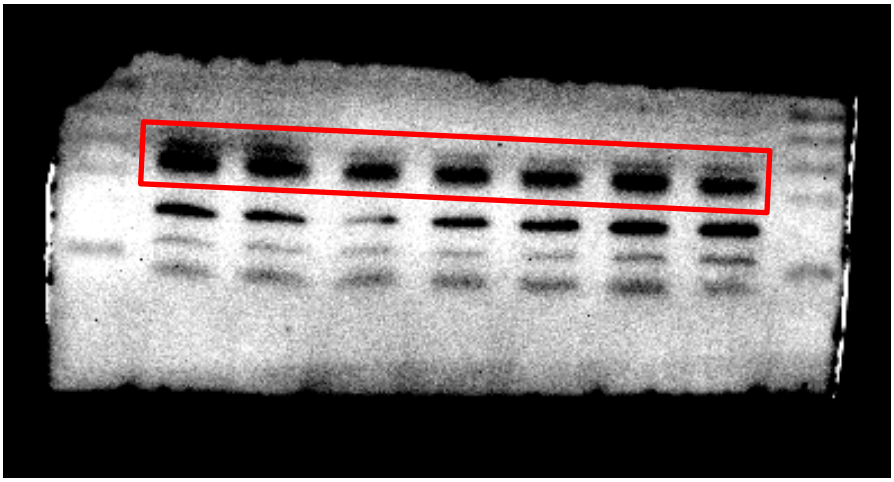
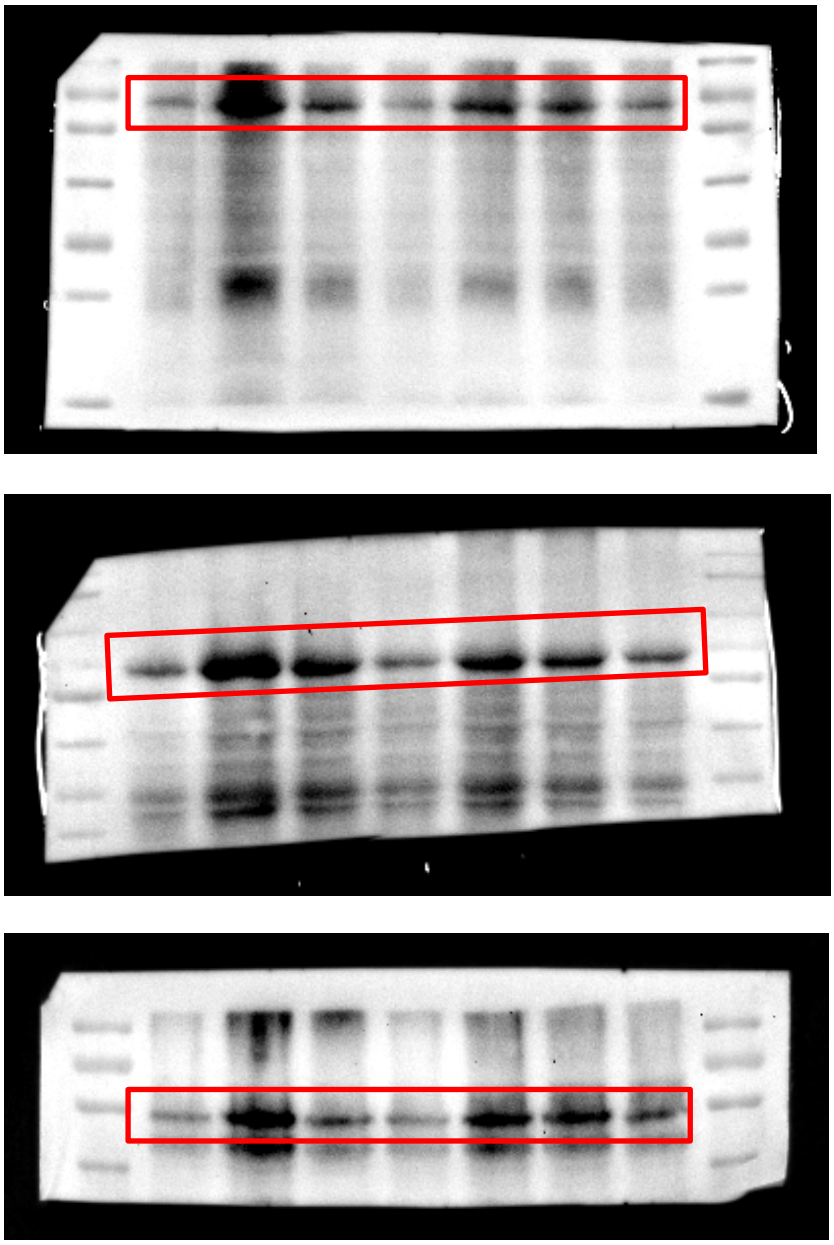






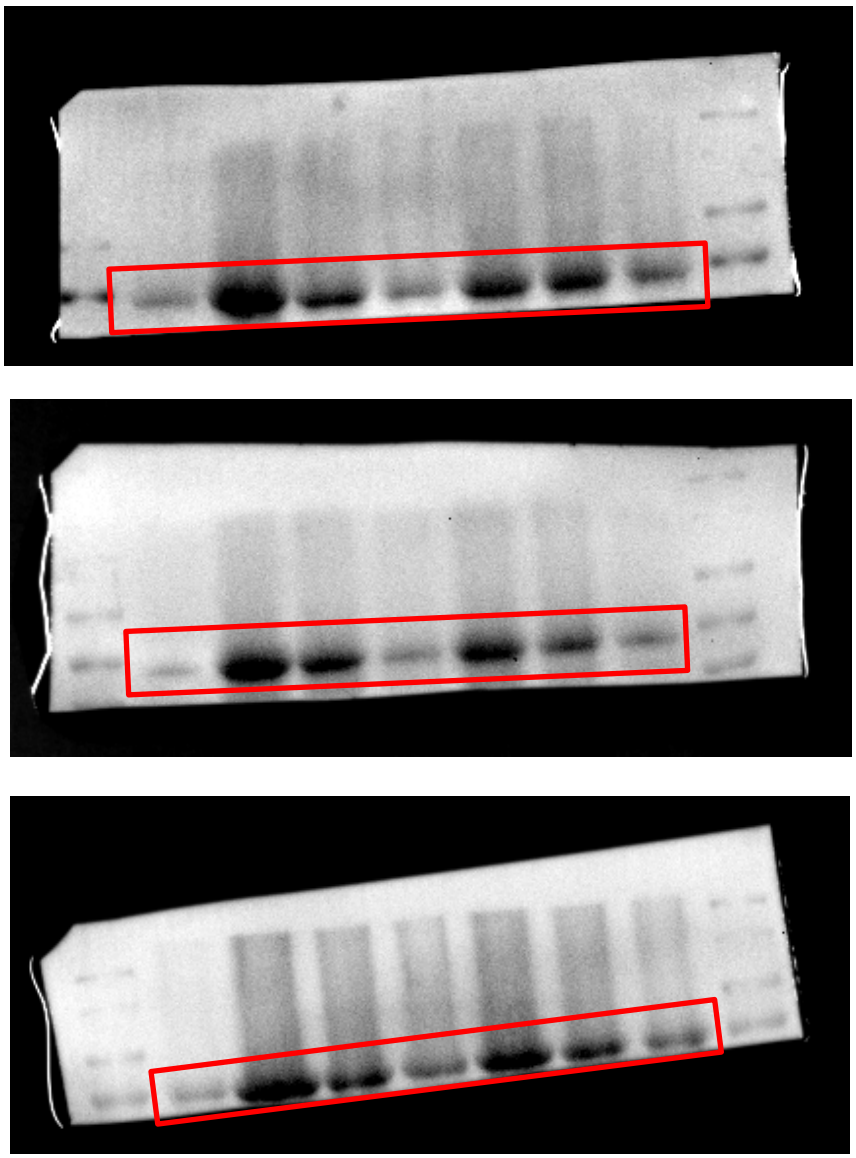
3.10 TXNIP (The band in the red frame is the target band)

Intact, Vehicle, BZM, FBX, 50 mg/kg of SSO, 100 mg/kg of SSO, 200 mg/kg of SSO



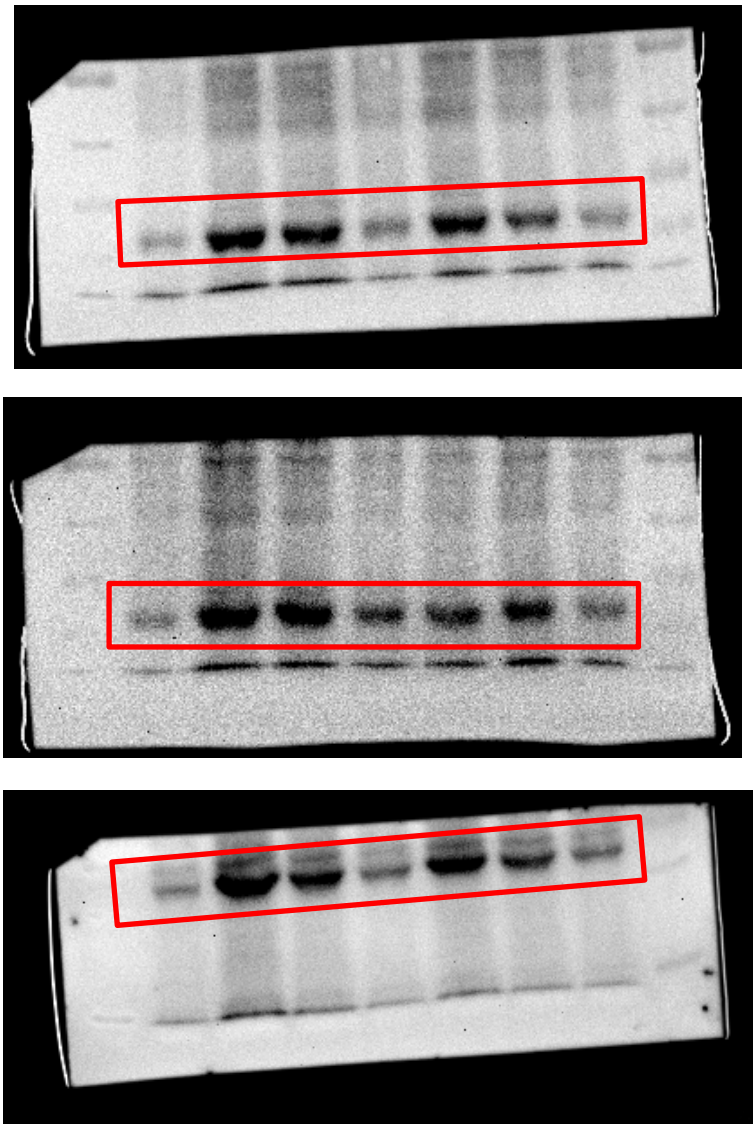
3.11 NLRP3 (The band in the red frame is the target band)

Intact, Vehicle, BZM, FBX, 50 mg/kg of SSO, 100 mg/kg of SSO, 200 mg/kg of SSO



3.12 ASC (The band in the red frame is the target band)

Intact, Vehicle, BZM, FBX, 50 mg/kg of SSO, 100 mg/kg of SSO, 200 mg/kg of SSO



3.13 Caspase1 (The band in the red frame is the target band)

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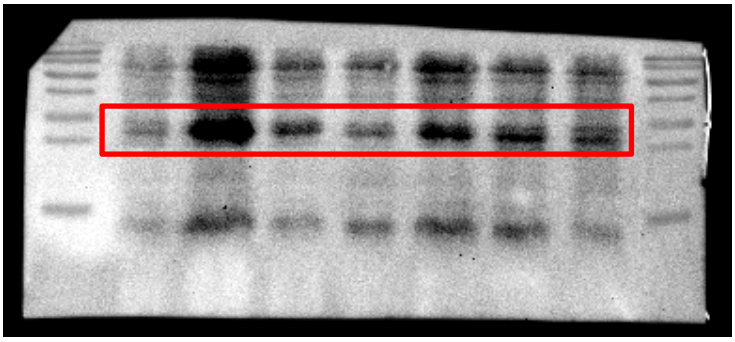

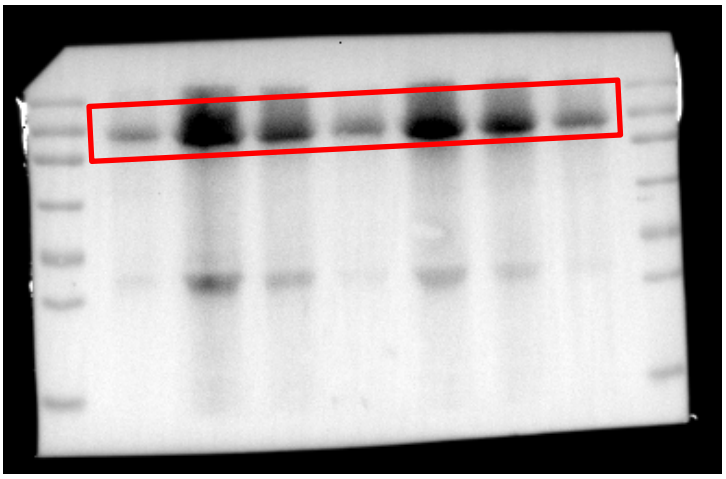

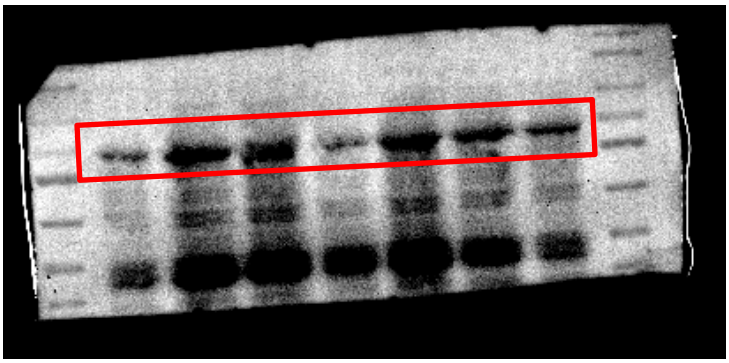

3.14 β-actin for TXNIP, NLRP3, ASC and Caspase1(The band in the red frame is the target band)

Intact, Vehicle, BZM, FBX, 50 mg/kg of SSO, 100 mg/kg of SSO, 200 mg/kg of SSO