

Supplementary Materials

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Selecting soybeans for sulfonylurea herbicide tolerance: a comparative proteomic study of seed germinations

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Supplementary Table 1. Details of the proteins identified with significant and more than 2-fold differential abundance as a result of 0.1 μ M MSM treatment (n=3)

Homologous protein	Accession #	# of GOs	Species	Homology (%)	Sequence length	eValue	Expt p/	Expt MW	Theoretical p/	Theoretical MW	Function
Photosystem I subunit	A5Z2K3	5	<i>Glycine max</i>	100	210	4.44E-151	4.00	15.3	9.63	23.0	energy
Alanine aminotransferase 3	A8IKE9	8	<i>Glycine max</i>	100	480	0	4.02	14.0	5.52	53.4	metabolism
Betaine aldehyde dehydrogenase	B0M1A5	18	<i>Glycine max</i>	100	503	0	4.07	16.0	5.35	54.6	defence
Peroxisomal 3-ketoacyl-CoA thiolase	B0M1A9	23	<i>Glycine max</i>	100	463	0	4.45	30.0	7.95	48.6	defence
Flavoprotein wrbA	C6SV84	5	<i>Glycine soja</i>	99	205	1.65E-144	4.35	28.1	6.09	21.8	transcription
Peroxiredoxin-2B	C6T072	15	<i>Glycine soja</i>	99.4	162	4.20E-112	4.25	43.2	5.41	17.5	defence
Ribonucleoprotein 31kDa, chloroplastic	C6T9I0	2	<i>Glycine soja</i>	100	280	0	4.46	41.7	4.78	30.9	transcription
Glyceraldehyde-3-phosphate dehydrogenase	C6T9R8	17	<i>Glycine max</i>	100	451	0	4.53	41.6	7.10	48.2	energy
Momilactone a synthase	C6TC47	1	<i>Glycine soja</i>	100	269	0	4.55	52.7	6.23	28.5	energy
Photosystem I reaction center subunit IV A	C6TC81	5	<i>Glycine soja</i>	96.2	129	8.46E-85	4.48	63.7	9.60	13.7	energy
Oxygen-evolving enhancer protein 1, chloroplastic	C6TC92	8	<i>Glycine soja</i>	100	329	0	4.19	64.9	5.58	34.8	energy
Glucose-1-phosphate adenylyltransferase (large subunit)	C6TE56	6	<i>Glycine max</i>	100	520	0	4.35	85.0	8.66	57.8	metabolism
60S acidic ribosomal protein P0	C6TGA6	14	<i>Glycine max</i>	98.8	319	0	4.40	100.7	5.00	34.2	protein synthesis
Nodule-enhanced malate dehydrogenase	C6TGD9	12	<i>Glycine max</i>	93	409	0	4.26	98.1	8.11	43.1	metabolism
Mitochondrial outer membrane protein porin of 36 kda	C6TGZ7	2	<i>Glycine soja</i>	100	276	0	4.45	104.4	7.07	29.8	metabolism
NAD(P)-binding rossmann-fold protein (isoform 1)	C6THR8	9	<i>Medicago truncatula</i>	78.5	331	0	4.63	28.9	8.91	35.7	defence
Ferredoxin--NADP reductase, root isozyme, chloroplastic	C6TIM5	5	<i>Glycine soja</i>	100	377	0	4.60	34.9	8.52	42.2	energy
NADP-dependent alkenal double bond reductase P2	C6TIQ5	2	<i>Glycine soja</i>	99.7	343	0	4.68	39.2	5.93	37.9	defence
Serine carboxypeptidase-like 51	C6TKX4	1	<i>Glycine soja</i>	98.7	458	0	4.66	42.8	4.88	51.0	metabolism
Chaperonin 20 kDa, chloroplastic	C6TNA3	3	<i>Glycine soja</i>	100	253	6.89E-178	4.73	42.9	7.79	26.7	protein storage
Eukaryotic translation initiation factor 5A2	C6ZHS4	9	<i>Glycine max</i>	100	160	1.77E-113	4.79	46.0	5.60	17.5	protein synthesis
Serine hydroxymethyltransferase	C6ZJZ0	20	<i>Glycine max</i>	100	518	0	4.80	59.1	8.83	57.4	defence
Mutant glycinin subunit A1aB1b	C7EA92	1	<i>Glycine max</i>	100	386	0	4.67	78.0	5.60	43.4	protein storage
Rubisco activase, alpha-form	D4N5G0	14	<i>Glycine max</i>	100	478	0	4.81	86.4	5.94	52.3	energy
Rubisco activase	D4N5G3	15	<i>Glycine max</i>	100	443	0	5.04	23.6	6.27	48.7	energy
1-deoxy-D-xylulose 5-phosphate reductoisomerase	F4ZZ27	6	<i>Glycine max</i>	100	465	0	5.22	28.0	5.93	50.5	protein synthesis
Beta-conglycinin beta subunit	F7J077	3	<i>Glycine max</i>	100	439	0	5.23	29.9	5.88	50.4	protein storage
Malate dehydrogenase	H2D5S3	17	<i>Glycine max</i>	100	328	0	4.91	34.7	5.91	35.2	defence
Malic enzyme	I1J4J6	16	<i>Glycine max</i>	100	591	0	5.21	46.6	5.83	65.0	metabolism
Aconitate hydratase	I1J8H1	13	<i>Glycine max</i>	100	901	0	5.07	53.3	5.56	98.5	energy
Succinate dehydrogenase [ubiquinone] flavoprotein subunit,	I1J8V9	7	<i>Glycine max</i>	100	630	0	5.23	54.3	6.20	69.3	energy
Ferredoxin--NADP reductase, leaf isozyme, chloroplastic	I1JCG8	13	<i>Glycine soja</i>	100	362	0	5.08	58.4	8.38	40.4	energy
S-formylglutathione hydrolase	I1JGB2	5	<i>Glycine soja</i>	100	285	0	4.91	68.7	6.55	32.1	defence
Heat shock 70 kDa protein	I1JGR5	6	<i>Glycine soja</i>	99.7	652	0	5.02	69.0	5.20	71.6	defence
Aldo/keto reductase family oxidoreductase	I1JLL3	3	<i>Glycine soja</i>	85.6	313	0	5.02	74.2	6.02	35.2	defence
Stem-loop-binding protein of 41 kDa	I1JR38	0	<i>Medicago truncatula</i>	91.5	378	0	5.13	68.6	7.70	42.0	defence
Glutamate-1-semialdehyde 2,1-aminomutase, chloroplastic	I1JSD2	8	<i>Glycine max</i>	96.4	470	0	4.91	85.4	6.05	50.0	protein synthesis
Plastocyanin, chloroplastic	I1JSY7	11	<i>Glycine soja</i>	100	165	3.48E-111	4.92	79.2	5.01	16.6	defence
5-methyltetrahydropteroyltriglutamate--homocysteine methyltransferase	I1JWK3	5	<i>Glycine soja</i>	100	799	0	5.04	78.5	6.41	88.7	protein synthesis
Superoxide dismutase	I1JYA9	7	<i>Glycine max</i>	100	240	3.18E-174	5.04	81.4	8.57	26.5	defence
Ribulose-phosphate 3-epimerase, chloroplastic	I1JZN0	12	<i>Glycine soja</i>	100	280	0	4.89	106.2	8.24	29.8	metabolism

Urease	I1K3K3	6	<i>Glycine max</i>	100	839	0	5.30	26.1	5.70	90.3	energy
Endoplasmic reticulum HSC70-cognate binding protein	I1K670	16	<i>Glycine soja</i>	100	668	0	5.51	31.2	5.08	73.6	defence
DPP6 amino-terminal domain protein	I1KAD3	4	<i>Medicago truncatula</i>	77.7	723	0	5.49	22.4	6.17	79.9	cell structure
Alcohol dehydrogenase	I1KAJ4	7	<i>Glycine max</i>	99.1	349	0	5.46	23.0	6.01	37.3	defence
Purple acid phosphatase	I1KC33	5	<i>Glycine max</i>	100	623	0	5.51	40.9	5.87	67.5	metabolism
Nucleoside diphosphate kinase	I1KJ17	9	<i>Glycine max</i>	100	149	3.20E-104	5.41	37.2	6.29	16.5	metabolism
Proteasome subunit alpha type	I1KKK0	8	<i>Glycine max</i>	100	250	0	5.21	33.4	6.61	27.3	protein storage
Monodehydroascorbate reductase , chloroplastic isoform x1	I1KPF0	8	<i>Glycine soja</i>	99.8	488	0	5.59	46.1	8.69	53.3	defence
Lactoylglutathione lyase	I1KPY5	8	<i>Glycine max</i>	100	356	0	5.34	49.5	6.56	39.6	defence
Phosphoglucomutase, cytoplasmic	I1KQ93	10	<i>Glycine soja</i>	98.5	582	0	5.52	53.4	5.35	63.4	metabolism
ATP-and Zn(2+)-dependent metalloprotease 2	I1KRI0	12	<i>Glycine max</i>	99	696	0	5.25	45.3	5.73	75.0	metabolism
Adenosylhomocysteinase	I1KS65	3	<i>Glycine max</i>	100	485	0	5.30	58.1	5.60	53.3	metabolism
Phospholipase (d alpha 1?)	I1KVD8	19	<i>Glycine max</i>	100	809	0	5.58	59.3	5.42	91.7	metabolism
V-H(+)-ATPase subunit A	I1KVU0	16	<i>Glycine max</i>	99.8	623	0	5.39	77.3	5.48	68.8	energy
Putative aldo/keto reductase 2	I1KWT3	0	<i>Glycine soja</i>	100	342	0	5.54	72.0	5.96	37.5	defence
Fumarylacetoacetase	I1KZY9	6	<i>Glycine soja</i>	100	421	0	5.50	84.6	5.85	45.8	metabolism
Oligopeptidase a	I1L4U3	6	<i>Glycine soja</i>	97.5	787	0	5.33	96.7	5.93	88.5	protein storage
Phosphoribulokinase	I1L540	11	<i>Glycine max</i>	100	407	0	5.47	100.8	5.75	45.3	defence
Serine carboxypeptidase-like 40	I1L5K6	1	<i>Glycine soja</i>	99.6	496	0	5.51	106.8	6.25	55.7	metabolism
2,3-bisphosphoglycerate-independent phosphoglycerate mutase	I1L6W0	14	<i>Glycine soja</i>	99.6	559	0	5.46	90.3	5.51	60.9	metabolism
Alpha-galactosidase	I1L6Y9	4	<i>Glycine max</i>	100	410	0	5.69	20.7	6.72	45.6	metabolism
Chaperonin-60kD, CPN60-2, mitochondrial	I1LAL4	11	<i>Glycine soja</i>	100	575	0	5.81	20.1	5.99	61.1	protein storage
26S proteasome regulatory particle	I1LBA2	9	<i>Glycine soja</i>	100	423	0	5.73	28.2	4.98	47.4	energy
Phosphoglucomutase, chloroplastic	I1LDX0	15	<i>Glycine soja</i>	96.8	628	0	5.68	36.4	6.01	68.5	defence
Dehydroascorbate reductase class glutathione S-transferase	I1LFD6	19	<i>Glycine max</i>	100	213	7.20E-150	5.80	40.1	5.98	23.4	defence
Transketolase, chloroplastic	I1LFG4	6	<i>Glycine soja</i>	99.9	742	0	5.80	46.0	6.12	80.2	metabolism
Glutathione peroxidase	I1LGG2	4	<i>Glycine max</i>	100	167	8.59E-117	6.13	44.4	5.88	18.5	defence
Acetylmithine deacetylase	I1LH18	1	<i>Glycine soja</i>	100	438	0	5.87	44.9	5.28	48.0	metabolism
Enoyl-[acyl-carrier-protein] reductase [NADH], chloroplastic	I1LIT1	5	<i>Glycine soja</i>	95.7	392	0	5.92	75.5	8.82	41.3	metabolism
Alanine--tRNA ligase	I1LIT8	9	<i>Glycine max</i>	100	999	0	6.02	74.3	5.66	109.6	transcription
Gamma interferon inducible lysosomal thiol reductase	I1LLR5	1	<i>Glycine soja</i>	100	241	8.39E-178	5.60	89.7	5.43	27.8	metabolism
Dihydroflavonol-4-reductase	I1LLS1	4	<i>Glycine soja</i>	100	273	0	5.65	84.4	5.51	29.8	metabolism
Sedoheptulose-1,7-bisphosphatase	I1LMN5	15	<i>Glycine soja</i>	100	387	0	5.77	86.0	5.86	41.8	metabolism
Quinone-oxidoreductase-like protein	I1LNP4	2	<i>Glycine soja</i>	98.5	328	0	5.81	90.2	8.27	34.8	defence
Fructose-bisphosphate aldolase	I1LPX6	19	<i>Glycine max</i>	100	398	0	5.82	80.7	6.86	42.9	defence
Osmotin-like protein	I1LQR8	3	<i>Phaseolus vulgaris</i>	80.6	248	1.05E-180	5.90	93.0	8.13	26.3	defence
Isocitrate lyase	I1LRR9	4	<i>Glycine max</i>	100	575	0	6.00	89.9	6.97	64.8	energy
Carotenoid 9,10-cleavage dioxygenase 1	I1M0X1	8	<i>Glycine soja</i>	99.1	548	0	6.09	86.6	6.27	61.5	metabolism
Dihydroxyacid dehydratase	I1M137	8	<i>Glycine max</i>	99.7	601	0	5.76	103.1	5.76	64.1	metabolism
Glutamine synthetase (leaf chloroplastic)	I1M170	6	<i>Glycine max</i>	100	432	0	5.88	102.1	6.42	47.7	protein synthesis
Pyruvate decarboxylase 1	I1M1V8	5	<i>Pisum sativum</i>	90.5	589	0	6.04	101.8	5.73	63.4	energy
Heat shock 70 kDa protein, mitochondrial	I1M2K9	9	<i>Glycine soja</i>	100	674	0	6.42	20.9	5.68	72.4	protein synthesis
PfkB family carbohydrate kinase	I1M561	3	<i>Medicago truncatula</i>	92.1	331	0	6.21	28.1	5.29	35.4	metabolism
Seed linoleate 13s-lipoxygenase-1	I1M597	4	<i>Glycine max</i>	100	702	0	6.21	29.2	5.99	78.8	metabolism
Oxygen-evolving enhancer protein 2	I1M712	11	<i>Glycine max</i>	100	264	0	6.30	31.5	7.69	28.6	energy

Glycine dehydrogenase [decarboxylating]	I1M923	13	<i>Glycine soja</i>	96.5	1059	0	6.36	33.5	7.20	114.9	energy
Aspartate-tRNA ligase	I1M984	9	<i>Medicago truncatula</i>	86.7	543	0	6.35	27.4	5.81	60.2	transcription
Probable beta-d-xylosidase 7-like	I1MAR9	6	<i>Glycine soja</i>	99.8	776	0	6.33	40.0	7.00	85.1	metabolism
Beta-D-xylosidase 1	I1MGH2	6	<i>Glycine soja</i>	94.8	775	0	6.53	39.1	8.44	84.0	metabolism
RuBisCO large subunit-binding protein subunit beta, chloroplastic	I1MJ28	13	<i>Glycine soja</i>	100	591	0	6.67	40.0	5.72	62.8	energy
Phosphoglycerate kinase	I1MJC7	11	<i>Glycine max</i>	100	401	0	6.15	46.7	5.96	42.4	metabolism
stromal 70 kDa heat shock protein,	I1MJU7	12	<i>Medicago truncatula</i>	91.2	689	0	6.18	40.5	5.20	73.8	protein storage
Superoxide dismutase [Cu-Zn?]	I1MNV1	7	<i>Glycine max</i>	100	160	6.31E-109	6.28	73.7	7.19	16.5	defence
L-idonate 5-dehydrogenase	I1MQ30	6	<i>Glycine soja</i>	100	364	0	6.61	73.0	6.27	39.2	metabolism
Ferric leghemoglobin reductase-2	I1MRV6	21	<i>Glycine max</i>	98	500	0	6.62	86.1	6.90	52.9	energy
NADP-dependent glyceraldehyde-3-phosphate dehydrogenase	I1MT35	1	<i>Glycine soja</i>	100	497	0	6.35	97.7	6.76	53.2	metabolism
Delta-1-pyrroline-5-carboxylate dehydrogenase 12A1	I1MTR0	6	<i>Glycine soja</i>	99.6	553	0	6.48	102.2	6.50	61.2	metabolism
NADH-ubiquinone oxidoreductase 75 kDa subunit	I1MZF9	13	<i>Medicago truncatula</i>	88.7	746	0	7.18	20.9	6.21	81.3	defence
Aldehyde dehydrogenase family 2 member B4, mitochondrial	I1N1F9	18	<i>Glycine soja</i>	100	536	0	6.73	33.5	6.69	58.3	energy
Quinone oxidoreductase-like protein, chloroplastic	I1N1G8	11	<i>Glycine soja</i>	94.4	395	0	6.94	30.5	8.96	42.0	defence
Processing peptidase	I1N1W7	2	<i>Medicago truncatula</i>	86.7	527	0	6.92	27.9	6.49	58.8	metabolism
Vacuolar-type proton ATPase subunit B2	I1N438	14	<i>Glycine soja</i>	100	489	0	7.01	37.5	4.95	54.2	energy
Protease Do-like 1, chloroplastic	I1N5Q9	5	<i>Glycine soja</i>	96.1	431	0	7.06	40.0	6.60	45.6	energy
Peptidyl-prolyl cis-trans isomerase CYP38, chloroplastic	I1N5T2	7	<i>Glycine soja</i>	99.8	445	0	7.15	41.1	5.07	48.7	defence
Alpha-1,4 glucan phosphorylase	I1N6A5	7	<i>Glycine max</i>	100	981	0	6.85	43.3	5.35	110.3	energy
6-phosphogluconate dehydrogenase	I1N6I4	4	<i>Glycine max</i>	100	499	0	6.93	43.5	7.60	55.4	metabolism
Proteasome subunit beta type	I1NC65	7	<i>Glycine max</i>	100	232	5.53E-168	6.85	52.1	6.98	26.4	protein storage
Protease 2 (or Prolyl oligopeptidase family protein?)	I1NF29	2	<i>Glycine soja</i>	99.7	766	0	6.85	64.2	5.80	86.5	energy
ATP synthase subunit beta	I1NFS4	11	<i>Glycine max</i>	100	559	0	6.94	63.4	5.80	59.8	energy
DHAR class glutathione S-transferase	I1NJ59	19	<i>Glycine max</i>	100	213	4.12E-150	6.95	59.2	5.81	23.5	defence
Formate-tetrahydrofolate ligase	I1NJ85	11	<i>Glycine soja</i>	99.4	636	0	6.80	85.7	6.51	67.4	metabolism
Disulfide isomerase-like protein	I7FST9	3	<i>Glycine max</i>	100	525	0	6.92	90.2	4.92	54.5	protein storage
Subtilisin-like protease 2	K7KZJ7	4	<i>Phaseolus vulgaris</i>	81	817	0	7.24	21.9	6.16	86.3	energy
Fumarase 1, mitochondrial	K7LGW1	7	<i>Glycine soja</i>	99.8	558	0	7.90	12.1	9.32	60.5	energy
Photosystem I reaction center subunit IV, chloroplastic	K7M3T5	4	<i>Glycine soja</i>	100	163	5.69E-93	8.04	41.2	10.24	17.7	energy
Endoplasmic reticulum chaperone	K7MP24	18	<i>Glycine max</i>	99.9	813	0	7.56	41.0	4.87	93.2	protein storage
Vacuolar protein sorting-associated protein 35	K7MP25	3	<i>Glycine soja</i>	89.2	735	0	7.56	41.0	4.87	93.2	protein storage
Beta-form rubisco activase	K7MPQ4	15	<i>Glycine max</i>	100	491	0	7.79	35.9	8.78	53.9	energy
Aminoacylase-1	K7N0I2	8	<i>Glycine max</i>	100	446	0	7.95	35.5	6.41	49.8	metabolism
Malate dehydrogenase [NADP], chloroplastic	K7N4G1	11	<i>Glycine soja</i>	94.5	424	0	7.25	44.8	6.34	46.6	metabolism
40S ribosomal protein SA	Q22518	9	<i>Glycine max</i>	100	310	0	7.27	42.9	5.08	33.9	protein synthesis
Class III acidic endochitinase	O48642	4	<i>Glycine max</i>	100	333	0	7.46	42.7	4.84	34.3	metabolism
Glycinin G1 (mutant glycinin subunit a1ab1b)	P04776	1	<i>Glycine max</i>	100	495	0	7.47	41.7	6.33	20.0	protein storage
Ribulose biphosphate carboxylase large chain	P27066	7	<i>Glycine max</i>	100	475	0	7.99	52.5	6.01	52.4	energy
Linoleate 9S-lipoxygenase-4	P38417	4	<i>Glycine max</i>	100	853	0	7.80	85.8	5.71	96.5	metabolism
Plasma membrane-associated AAA-ATPase	Q2HZ34	10	<i>Glycine max</i>	100	807	0	7.34	108.3	5.18	89.8	energy
Photosystem I iron-sulfur center	Q2PMN3	13	<i>Glycine max</i>	100	81	1.79E-52	7.46	108.2	6.65	8.9	energy
ATP synthase subunit beta, chloroplastic	Q2PMV0	6	<i>Glycine max</i>	100	498	0	8.13	15.3	5.29	53.8	energy
Aspartate aminotransferase	Q42803	18	<i>Glycine max</i>	100	427	0	8.41	12.5	7.16	44.9	metabolism
Lipoxygenase	Q43446	4	<i>Glycine max</i>	100	853	0	8.49	18.3	5.63	96.7	metabolism

Ascorbate peroxidase	Q43758	6	<i>Glycine max</i>	100	250	3.53E-180	8.80	28.7	5.51	27.1	defence
Beta-conglycinin beta subunit	Q50JD8	3	<i>Glycine max</i>	100	420	0	8.49	21.6	5.67	48.3	protein storage
Proglycinin A2B1 (g2 precursor)	Q549Z4	1	<i>Glycine max</i>	100	485	0	8.44	41.3	5.46	54.4	storage protein
Cytosolic ascorbate peroxidase 2	Q76LA6	6	<i>Glycine max</i>	100	250	3.57E-180	8.42	43.2	5.65	27.1	defence
NADH-dependent hydroxypyruvate reductase	Q84L66	6	<i>Glycine max</i>	100	386	0	8.51	43.8	6.98	42.2	metabolism
Glycinin A1bB2-445	Q852U5	1	<i>Glycine max</i>	100	481	0	8.62	48.5	5.86	54.2	protein storage
Chalcone--flavonone isomerase 1A	Q93XE6	8	<i>Glycine max</i>	100	218	5.29E-154	8.05	56.4	6.23	23.3	second
Sodium/hydrogen exchanger	Q94LX3	4	<i>Torenia hybrid cultivar</i>	100	555	0	8.07	58.8	5.12	70.3	metabolism
Ribulose biphosphate carboxylase small chain	Q9FUJ5	16	<i>Glycine max</i>	100	178	7.52E-131	8.88	19.7	8.87	20.0	energy
Glycinin	Q9SB11	3	<i>Glycine max</i>	100	563	0	8.89	41.0	5.17	63.8	protein storage
Isoflavone reductase homolog 2	Q9SDZ0	1	<i>Glycine max</i>	100	310	0	8.86	59.9	5.60	33.9	defence