

Table 3

Kyoto Encyclopedia of Genes and Genomes (KEGG) pathway enrichment for the differentially expressed proteins from A β PP/PS1 transgenic mice treated with tocotrienol-rich fraction (Tg-TRF) compared with the vehicle control group, A β PP/PS1 transgenic mice treated with palm oil striped of vitamin E (Tg-PO) using KOBAS. The pathways are arranged according to the number of differentially expressed proteins in each pathway. Only the top five enriched pathways ($p < 0.05$) are listed. ↓ represents significantly downregulated ($p < 0.05$) protein. ↑ represents significantly upregulated ($p < 0.05$) protein.

Pathway	Proteins number	p -value	Corrected p -value	Accession number	Protein names	Gene names	Proteins expression
Hippocampus							
Metabolic pathways	25	0.0004	0.0099	P05064	Fructose-bisphosphate aldolase	ALDOA	↓
				P03911	NADH-ubiquinone oxidoreductase chain 4	MTND4	↓
				Q9Z0J4	Nitric oxide synthase, brain	NOS1	↓
				Q91YT0	NADH dehydrogenase [ubiquinone] flavoprotein 1	NDUFV1	↑
				Q8CGC7	Bifunctional glutamate/proline--tRNA ligase	EPRS	↓
				Q80UP3	Diacylglycerol kinase zeta	DGKZ	↓
				P62814	V-type proton ATPase subunit B, brain isoform	ATP6V1B2	↑
				Q61753	D-3-phosphoglycerate dehydrogenase	PHGDH	↑
				Q9Z1B3	1-phosphatidylinositol 4,5-bisphosphate phosphodiesterase beta-1	PLCB1	↓
				Q9CZS1	Aldehyde dehydrogenase X	ALDH1B1	↑
				Q91WD5	NADH dehydrogenase [ubiquinone] iron-sulfur protein 2	NDUFS2	↑
				Q7TMF3	NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 12	NDUFA12	↑
				Q91YQ5	Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit 1	RPN1	↓
				P00397	Cytochrome c oxidase subunit 1	MTCO1	↓
				Q5SUR0	Phosphoribosylformylglycinamide synthase	PFAS	↓
				Q91V92	ATP-citrate synthase	ACLY	↓
				Q920P5	Adenylate kinase isoenzyme 5	AK5	↑
				P56480	ATP synthase subunit beta	ATP5B	↑
				Q9CQ60	6-phosphogluconolactonase	PGLS	↑

				Q9DCS9	NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 10	NDUFB10	↑
				Q924M7	Mannose-6-phosphate isomerase	MPI	↑
				P24549	Retinal dehydrogenase 1	ALDH1A1	↑
				P61922	4-aminobutyrate aminotransferase	ABAT	↑
				P26443	Glutamate dehydrogenase 1	GLUD1	↑
				Q4KWH5	1-phosphatidylinositol 4,5-bisphosphate phosphodiesterase eta-2	PLCH2	↓
Huntington's disease	12	3.99E-07	6.26E-05	P00397	Cytochrome c oxidase subunit 1	MTCO1	↓
				Q9DCS9	NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 10	NDUFB10	↑
				Q9Z1B3	1-phosphatidylinositol 4,5-bisphosphate phosphodiesterase beta-1	PLCB1	↓
				Q91WD5	NADH dehydrogenase [ubiquinone] iron-sulfur protein 2	NDUFS2	↑
				Q91YT0	NADH dehydrogenase [ubiquinone] flavoprotein 1	NDUFV1	↑
				P11352	Glutathione peroxidase 1	GPX1	↓
				Q7TMF3	NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 12	NDUFA12	↑
				Q62108	Disks large homolog 4	DLG4	↓
				P56480	ATP synthase subunit beta	ATP5B	↑
				Q3UVX5	Metabotropic glutamate receptor 5	GRM5	↓
				O08788	Dynactin subunit 1	DCTN1	↓
				Q60931	Voltage-dependent anion-selective channel protein 3	VDAC3	↑
Alzheimer's disease	9	5.88E-05	0.0023	P12023	Amyloid beta A4 protein	APP	↓
				P00397	Cytochrome c oxidase subunit 1	MTCO1	↓
				Q9DCS9	NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 10	NDUFB10	↑
				Q9Z0J4	Nitric oxide synthase, brain	NOS1	↓
				Q9Z1B3	1-phosphatidylinositol 4,5-bisphosphate phosphodiesterase beta-1	PLCB1	↓
				Q91WD5	NADH dehydrogenase [ubiquinone] iron-sulfur protein 2	NDUFS2	↑
				Q91YT0	NADH dehydrogenase [ubiquinone] flavoprotein 1	NDUFV1	↑

Oxidative phosphorylation	8	4.62E-05	0.0023	Q7TMF3	NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 12	NDUFA12	↑
				P56480	ATP synthase subunit beta	ATP5B	↑
				P00397	Cytochrome c oxidase subunit 1	MTCO1	↓
				Q9DCS9	NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 10	NDUFB10	↑
				P03911	NADH-ubiquinone oxidoreductase chain 4	MTND4	↓
				Q91WD5	NADH dehydrogenase [ubiquinone] iron-sulfur protein 2	NDUFS2	↑
				Q91YT0	NADH dehydrogenase [ubiquinone] flavoprotein 1	NDUFV1	↑
				Q7TMF3	NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 12	NDUFA12	↑
Parkinson's disease	8	7.53E-05	0.0024	P56480	ATP synthase subunit beta	ATP5B	↑
				P62814	V-type proton ATPase subunit B, brain isoform	ATP6V1B2	↑
				P00397	Cytochrome c oxidase subunit 1	MTCO1	↓
				Q9DCS9	NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 10	NDUFB10	↑
				P03911	NADH-ubiquinone oxidoreductase chain 4	MTND4	↓
				Q60931	Voltage-dependent anion-selective channel protein 3	VDAC3	↑
				Q91WD5	NADH dehydrogenase [ubiquinone] iron-sulfur protein 2	NDUFS2	↑
				Q91YT0	NADH dehydrogenase [ubiquinone] flavoprotein 1	NDUFV1	↑
Q7TMF3	NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 12	NDUFA12	↑				
P56480	ATP synthase subunit beta	ATP5B	↑				
Medial prefrontal cortex							
Metabolic pathways	7	0.0018	0.0315	P30275	Creatine kinase U-type	CKMT1	↑
				Q9CQZ6	NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 3	NDUFB3	↑
				Q8K183	Pyridoxal kinase	PDXK	↑
				P54071	Isocitrate dehydrogenase [NADP]	IDH2	↑
				P05202	Aspartate aminotransferase	GOT2	↑
				O35435	Dihydroorotate dehydrogenase (quinone)	DHODH	↓
				P16858	Glyceraldehyde-3-phosphate dehydrogenase	GAPDH	↓

Biosynthesis of amino acids	3	0.0002	0.0132	P05202	Aspartate aminotransferase	GOT2	↑
				P54071	Isocitrate dehydrogenase [NADP]	IDH2	↑
				P16858	Glyceraldehyde-3-phosphate dehydrogenase	GAPDH	↓
Carbon metabolism	3	0.0006	0.0138	P05202	Aspartate aminotransferase	GOT2	↑
				P54071	Isocitrate dehydrogenase [NADP]	IDH2	↑
				P16858	Glyceraldehyde-3-phosphate dehydrogenase	GAPDH	↓
Alzheimer's disease	2	0.0271	0.1603	Q9CQZ6	NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 3	NDUFB3	↑
				P16858	Glyceraldehyde-3-phosphate dehydrogenase	GAPDH	↓
Arginine and proline metabolism	2	0.0029	0.0407	P05202	Aspartate aminotransferase	GOT2	↑
				P30275	Creatine kinase U-type	CKMT1	↑
Striatum							
Glycerolipid metabolism	2	0.0027	0.0275	Q9JII6	Alcohol dehydrogenase [NADP(+)]	AKR1A1	↑
				Q9CZS1	Aldehyde dehydrogenase X	ALDH1B1	↑
Glycolysis / Gluconeogenesis	2	0.0035	0.0290	Q9JII6	Alcohol dehydrogenase [NADP(+)]	AKR1A1	↑
				Q9CZS1	Aldehyde dehydrogenase X	ALDH1B1	↑
Proteasome	2	0.0016	0.0265	Q9WVJ2	26S proteasome non-ATPase regulatory subunit 13	PSMD13	↑
				O55234	Proteasome subunit beta type-5	PSMB5	↑
Valine, leucine and isoleucine degradation	2	0.0019	0.0265	Q9CZS1	Aldehyde dehydrogenase X	ALDH1B1	↑
				P38060	Hydroxymethylglutaryl-CoA lyase	HMGCL	↑
Pentose and glucuronate interconversions	2	0.0008	0.0265	Q9JII6	Alcohol dehydrogenase [NADP(+)]	AKR1A1	↑
				Q9CZS1	Aldehyde dehydrogenase X	ALDH1B1	↑