

Metabolomics profiling reveals the role of PEDF on triple-negative breast cancer cells under glycaemic loading

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Supplemental Table S1 List of identified metabolites extracted from MS-DIAL

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Table S1. List of identified metabolites extracted from MS-DIAL.

Metabolite name	Average Rt(min)	Average RI	Quant mass	Class
1-Monopalmitin	14.005	2585.56	371.3	Lipids and lipid-like molecules
2-Aminoadipic acid	10.042	1729.86	73	Organic acids and derivatives
3-Hydroxyisovaleric acid	6.742	1223.26	131.0133	Lipids and lipid-like molecules
4-Hydroxybutanoic acid	6.992	1258.62	116.975	Organometallic compounds
Acetic acid	12.399	2209.06	69.05	Lipids and lipid-like molecules
Adenosine	14.296	2655.68	230.0444	Nucleosides, nucleotides, and analogues
alpha-Ketoglutaric acid	9.143	1574.42	73.1	Organic acids and derivatives
Aminomalonic acid	8.574	1482.19	147.02	Organic acids and derivatives
Arachidic acid	13.395	2440.7	369.32	Organometallic compounds
Arachidonic acid	13.162	2386.52	80	Lipids and lipid-like molecules
Cholesterol	17.227	3265.5	129.0063	Lipids and lipid-like molecules
Citric acid	10.623	1843.8	73.025	Organic acids and derivatives
Cysteine	9.109	1568.8	69.06	Organic acids and derivatives
D-Arabitol	10.114	1743.83	217.0778	Organic oxygen compounds
Dihydrouracil	6.138	1137.92	56.02	Organoheterocyclic compounds
3-Hydroxybutyric acid	6.27	1156.51	191.0636	Organic acids and derivatives
DL-Homocysteine	9.752	1676.77	234.0583	Organic acids and derivatives
L-5-Oxoproline	8.923	1537.46	73.06	Organic acids and derivatives
D-Ribose 5-phosphate	12.116	2143.26	315.0143	Organic oxygen compounds
D-Threitol	8.82	1520.24	73.1	Organic oxygen compounds
Ethanolamine	7.192	1286.86	174.0813	Organometallic compounds
Fumaric acid	7.583	1342.11	81.95	Organic acids and derivatives
GABA	8.954	1542.65	174.1	Organic acids and derivatives
Glucose 6-phosphate	13.103	2372.75	387.0616	Organic oxygen compounds
Glutaric acid	8.085	1413.03	84.06667	Organic acids and derivatives
Glycerol	7.263	1296.93	191.0125	Organometallic compounds
Glycine	7.488	1328.65	73.05833	Organic acids and derivatives
Inosine	14.046	2595.37	73.06	Nucleosides, nucleotides, and analogues
Malate	8.66	1494.41	73.01538	Organic acids and derivatives
Phenylalanine	9.568	1645.82	218.1	Organic acids and derivatives
Proline	7.423	1319.49	142.1	Organic acids and derivatives
Threonine	8.023	1404.33	73.0625	Organic acids and derivatives
Lactic acid	5.578	1044.26	73.05	Organic acids and derivatives
Lysine	11.145	1946.16	174.1	Organic acids and derivatives
Alanine	5.919	1106.96	116.0875	Organic acids and derivatives
Asparagine	9.802	1685.19	231.025	Organic acids and derivatives
Aspartic acid	8.246	1435.88	101.96	Organic acids and derivatives
Glutamic acid	9.464	1628.37	247.1	Organic acids and derivatives
Glutamine	10.359	1792.02	155.975	Organic acids and derivatives
Linolenic acid	12.508	2234.34	80	Lipids and lipid-like molecules
L-Leucine	7.093	1272.9	231.0769	Organic acids and derivatives
Methionine	8.889	1531.85	176.075	Organic acids and derivatives

Serine	7.835	1377.68	173	Organic acids and derivatives
Tryptophan	12.62	2260.43	202.0538	Organoheterocyclic compounds
Tyrosine	11.247	1966.03	218.1	Organic acids and derivatives
Malonic acid	6.476	1185.6	73.1	Organic acids and derivatives
Maltose	14.665	2744.56	73.04285	Organic oxygen compounds
Melibiose	15.052	2837.76	204.0429	Organic oxygen compounds
Methionine sulfoxide	10.228	1766.3	128.0364	Organic acids and derivatives
Methylmalonic acid	6.612	1204.87	147.04	Organic acids and derivatives
Myo-Inositol	11.766	2067.82	147.0333	Organic oxygen compounds
valine	6.51	1190.52	86.05	Organic acids and derivatives
Oleic acid	12.478	2227.4	75	Lipids and lipid-like molecules
O-Phosphoethanolamine	10.45	1809.81	299.0077	Organic acids and derivatives
Palmitic acid	11.674	2049.86	73.1	Lipids and lipid-like molecules
Palmitoleic Acid	11.569	2029.26	101.96	Organometallic compounds
Pantothenic acid	11.518	2019.12	103.0077	Organic acids and derivatives
Stearic acid	12.575	2249.89	73	Lipids and lipid-like molecules
Succinic acid	7.472	1326.43	247.0667	Organic acids and derivatives
Uracil	7.695	1357.99	184.0333	Organoheterocyclic compounds
Uridine 5'-diphospho-N-acetylglucosamine	10.449	1809.54	231	Nucleosides, nucleotides, and analogues

RT retention time, RI retention indices

Table S2. The mean value of the significant metabolites' peak intensity.

Metabolites	Groups	Mean
Adenosine	N-control	1.207529
	N-treated	0.052681
	H-control	-0.86652
	H-treated	-0.39369
Citric acid	N-control	0.808662
	N-treated	0.749081
	H-control	-0.80556
	H-treated	-0.75219
Glucose 6-phosphate	N-control	-0.38244
	N-treated	-1.08695
	H-control	1.014286
	H-treated	0.455104
Glutamic acid	N-control	-0.99802
	N-treated	-0.49917
	H-control	1.128907
	H-treated	0.368277
Glutamine	N-control	-0.73131
	N-treated	-0.7921
	H-control	0.51794
	H-treated	1.005465
Lactic acid	N-control	-0.66212
	N-treated	-1.07169
	H-control	1.070445
	H-treated	0.663359
Malate	N-control	-0.86021
	N-treated	-0.64782
	H-control	1.190296

	H-treated	0.317733
Myo-Inositol	N-control	-0.65143
	N-treated	-0.89268
	H-control	0.548133
	H-treated	0.995974
Phenylalanine	N-control	1.139066
	N-treated	0.476861
	H-control	-0.88983
	H-treated	-0.7261

Key: H, high glucose, N, normal glucose

Table S3. Pathway Enrichment analysis of altered metabolites.

Metabolic pathway	^a Total Cmpd	^b hits	^c Raw p	^d FDR
Warburg Effect	58	6	1.88E-06	0.000185
Transfer of Acetyl Groups into Mitochondria	22	2	0.0145	0.287
Inositol Phosphate Metabolism	26	2	0.02	0.287
Purine Metabolism	74	3	0.0222	0.287
Phenylalanine and Tyrosine Metabolism	28	2	0.0231	0.287
Urea Cycle	29	2	0.0247	0.287
Ammonia Recycling	32	2	0.0297	0.287
Citric Acid Cycle	32	2	0.0297	0.287
Inositol Metabolism	33	2	0.0315	0.287
Amino Sugar Metabolism	33	2	0.0315	0.287
Aspartate Metabolism	35	2	0.0352	0.287
Gluconeogenesis	35	2	0.0352	0.287
Nicotinate and Nicotinamide Metabolism	37	2	0.039	0.287
Galactose Metabolism	38	2	0.041	0.287
Pyruvate Metabolism	48	2	0.0628	0.399
Glutamate Metabolism	49	2	0.0651	0.399
Phenylacetate Metabolism	9	1	0.0767	0.442
Malate-Aspartate Shuttle	10	1	0.0849	0.462
Glucose-Alanine Cycle	13	1	0.109	0.562
Alanine Metabolism	17	1	0.14	0.655
Phosphatidylinositol Phosphate Metabolism	17	1	0.14	0.655
Nucleotide Sugars Metabolism	20	1	0.163	0.697
Glutathione Metabolism	21	1	0.171	0.697
Betaine Metabolism	21	1	0.171	0.697
Glycolysis	25	1	0.2	0.767
Cysteine Metabolism	26	1	0.207	0.767
Selenoamino Acid Metabolism	28	1	0.222	0.767
Pentose Phosphate Pathway	29	1	0.229	0.767
Folate Metabolism	29	1	0.229	0.767
Lysine Degradation	30	1	0.236	0.767
Starch and Sucrose Metabolism	31	1	0.243	0.767
Beta-Alanine Metabolism	34	1	0.263	0.805
Propanoate Metabolism	42	1	0.315	0.9
Methionine Metabolism	43	1	0.321	0.9
Histidine Metabolism	43	1	0.321	0.9
Arginine and Proline Metabolism	53	1	0.381	1
Glycine and Serine Metabolism	59	1	0.415	1
Pyrimidine Metabolism	59	1	0.415	1
Valine, Leucine and Isoleucine Degradation	60	1	0.421	1
Tryptophan Metabolism	60	1	0.421	1
Arachidonic Acid Metabolism	69	1	0.468	1
Tyrosine Metabolism	72	1	0.483	1

^aTotal Cmpd: total number of compounds in the pathway, ^bHit: actually matched number from the data

^cRaw p: p-value calculated from the enrichment analysis, ^dFDR: p-value adjusted using False Discovery Rate

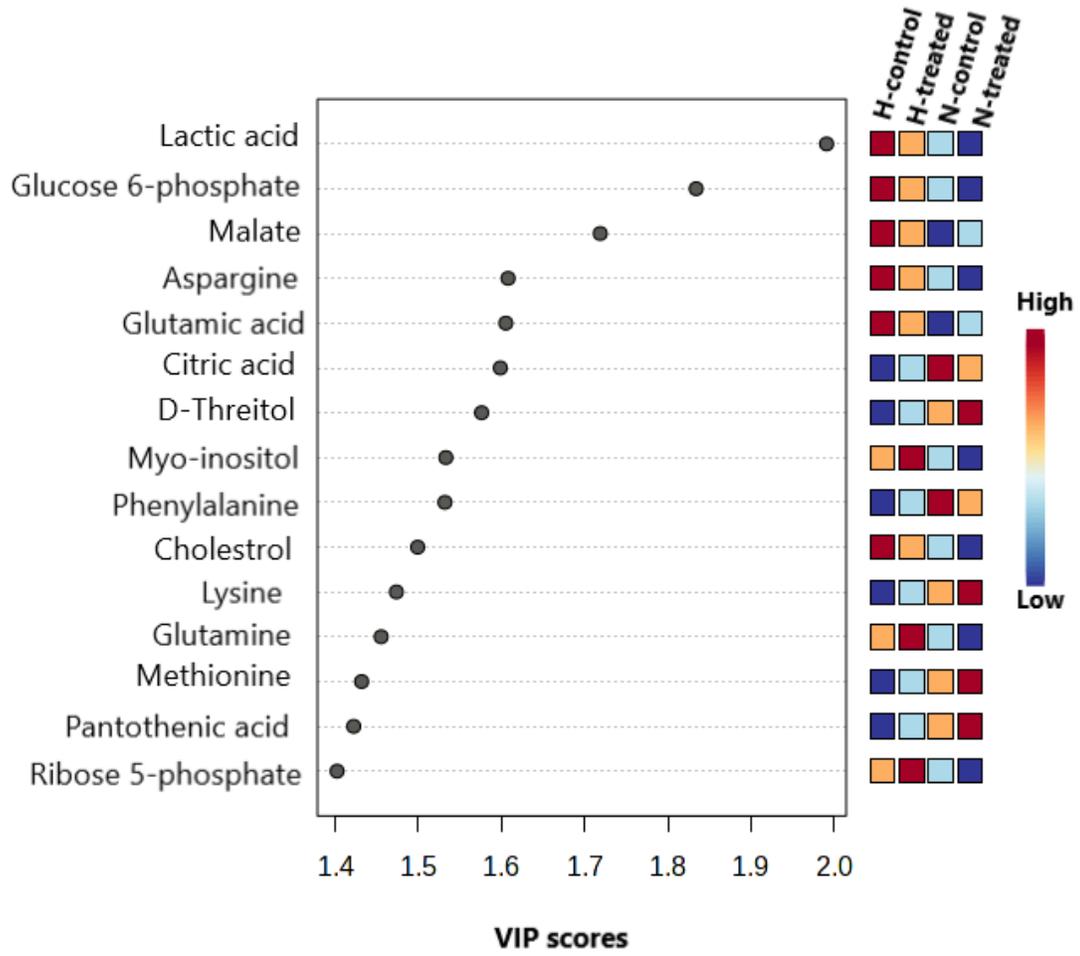


Figure S1. Variable importance in projection (VIP) scores indicate the most important metabolites that contribute to the separation of metabolic profiles among groups. Metabolite abundances are indicated on a colour scale from blue to red, which represents low and high, respectively.