**Table S1-1 Summary of differentially expressedmetabolitesof CJ compared with GJ**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **MS2 name** | **rt** | **mz** | **VIP** | **P-VALUE** | **FOLD CHANGE** |
| Choline | 30.5437 | 104.1074 | 1.5294 | 0.0180 | 2.6238 |
| 17-phenyl trinor Prostaglandin E2 serinol amide | 390.015 | 460.2693 | 1.4859 | 0.0242 | 5.3343 |
| tetranor-PGEM-d6 | 241.398 | 335.1997 | 1.3699 | 0.0008 | 1.8174 |
| Tryptophan | 201.763 | 205.0971 | 1.5732 | 0.0006 | 1.5375 |
| Arginine | 29.7890 | 175.1190 | 1.8007 | 0.0000 | 2.8363 |
| Phe Trp Ser Thr | 240.884 | 540.2411 | 1.1719 | 0.0004 | 2.6676 |
| 2-Hydroxycinnamic acid | 95.3457 | 165.0546 | 1.3827 | 0.0065 | 1.4117 |
| Valine | 52.4709 | 118.0865 | 1.6853 | 0.0001 | 2.0993 |
| Thiomorpholine 3-carboxylate | 42.2040 | 148.0426 | 1.0769 | 0.0482 | 1.2443 |
| (+)-4,11-Eudesmadien-3-one | 329.876 | 219.1743 | 1.1948 | 0.0181 | 1.8846 |
| Tyrosine | 95.2671 | 182.0812 | 1.3827 | 0.0056 | 1.4700 |
| Trimethylamine N-oxide | 32.2074 | 76.0764 | 1.7395 | 0.0039 | 3.9059 |
| Echinopsine | 167.249 | 160.0757 | 1.7621 | 0.0099 | 35.8361 |
| 6-Hydroxy-5-methoxyindole glucuronide | 213.715 | 340.1025 | 1.6758 | 0.0000 | 9.5599 |
| Isobutyryl carnitine | 192.110 | 232.1543 | 1.1334 | 0.0386 | 1.3777 |
| 3-ketosphinganine | 409.805 | 300.2896 | 1.7071 | 0.0087 | 3.8938 |
| 2-Methylbutyroylcarnitine | 219.334 | 246.1699 | 1.3695 | 0.0059 | 1.5527 |
| Nitroethane | 240.660 | 76.0400 | 1.6777 | 0.0001 | 1.9971 |
| Methioninesulfoxide | 60.5805 | 166.0533 | 1.5521 | 0.0011 | 1.4442 |
| 4-Oxoproline | 30.8645 | 130.0500 | 1.5233 | 0.0012 | 1.4105 |
| Clofop | 91.4441  | 293.0543  | 1.6767  | 0.0000  | 2.8907  |
| 7-(1,3-Cyclohexadienyl)-5-hydroxy-2,6-dimethyl-2-hepten-4-one | 455.530 | 235.1692  | 1.7689  | 0.0010  | 1.9292  |
| gamma-Glutamylleucine | 204.707 | 261.1444  | 1.4850  | 0.0024  | 2.0057  |
| Alpha-Pyrrolidinopropiophenone | 453.658 | 204.1383  | 1.7015  | 0.0002  | 2.4824  |
| PC(22:4(7Z,10Z,13Z,16Z)/0:0) | 463.870 | 572.3712  | 1.5545  | 0.0016  | 1.8458  |
| 3-Buten-1-amine | 35.401 | 72.0815  | 1.7292  | 0.0000  | 2.1768  |
| L-gamma-glutamyl-L-valine | 172.268 | 247.1287  | 1.6922  | 0.0001  | 2.1243  |
| Methionine | 61.629 | 150.0584  | 1.6063  | 0.0003  | 2.1971  |
| Calystegine A7 | 202.024 | 160.0950  | 1.6353  | 0.0001  | 1.8139  |
| PC(18:0/0:0) | 485.135 | 524.3713  | 1.3653  | 0.0116  | 1.4699  |
| Asperagenin | 444.835 | 449.3262  | 1.8452  | 0.0000  | 14.0348  |
| 3-methyl sulfolene | 91.431 | 133.0334  | 1.7084  | 0.0000  | 3.4334  |
| Serotonin | 167.279 | 177.1023  | 1.7569  | 0.0087  | 28.5427  |
| PC(22:6(4E,7E,10E,13E,16E,19E)/0:0)[U] | 447.826 | 568.3377  | 1.2458  | 0.0216  | 1.5146  |
| 1-(8Z,11Z,14Z-eicosatrienoyl)-sn-glycero-3-phosphocholine | 447.777 | 546.3557  | 1.3776  | 0.0085  | 1.6414  |
| Phenylacetylglycine | 240.670 | 194.0812  | 1.6685  | 0.0000  | 2.4810  |
| phenylacetylglutamine | 226.226 | 265.1182  | 1.7279  | 0.0000  | 8.5753  |
| Taccagenin | 486.129 | 447.3104  | 1.7867  | 0.0005  | 2.5434  |
| PC(7:0/O-8:0) | 419.297 | 482.3242  | 1.3510  | 0.0212  | 1.5865  |
| PC(0:0/20:4(5Z,8Z,11Z,14Z)) | 432.179 | 544.3400  | 1.4763  | 0.0046  | 1.6603  |
| Scalarin | 479.880 | 445.2948  | 1.7967  | 0.0006  | 95.1116  |
| C16 Sphingosine | 370.144 | 272.2582  | 1.7344  | 0.0061  | 4.0821  |
| PC(18:3(6Z,9Z,12Z)/0:0)[U] | 411.136 | 518.3244  | 1.5173  | 0.0047  | 1.7784  |
| Phytosphingosine | 364.543 | 318.3002  | 1.3112  | 0.0424  | 2.0365  |
| Lysine | 26.965 | 147.1128  | 1.7777  | 0.0000  | 2.7309  |
| PC(16:0/0:0)[U] | 438.421 | 496.3400  | 1.2893  | 0.0261  | 1.4450  |
| 2'-Aminoacetophenone | 95.476 | 136.0757  | 1.3190  | 0.0134  | 1.3804  |
| PC(15:1(9Z)/0:0) | 409.535 | 480.3086  | 1.3332  | 0.0111  | 2.1707  |
| Indole | 202.026 | 118.0654  | 1.3805  | 0.0098  | 1.2985  |
| 4-Deoxytetronic acid | 92.612 | 87.0447  | 1.7391  | 0.0011  | 2.1295  |
| gamma-Glutamyltyrosine | 182.892  | 311.1236  | 1.5850  | 0.0075  | 2.1541  |
| 2-hydroxy-butanoic acid | 92.531  | 105.0550  | 1.7172  | 0.0000  | 2.0972  |
| Ginkgotoxin | 249.140 | 184.0969  | 1.8320  | 0.0027  | 32.2052  |
| L-Arginine | 29.002 | 197.1010  | 1.7372  | 0.0000  | 2.1509  |
| 1,25-dihydroxy-10,19-methano-23-oxavitamin D3 | 482.779 | 433.3312  | 1.8575  | 0.0002  | 73.1638  |
| 1,25-Dihydroxy-24-oxo-16-ene-vitamin D3 | 485.535 | 429.2999  | 1.8052  | 0.0001  | 6.8670  |
| cis-4-Hydroxy-D-proline | 87.828 | 132.0658  | 1.5924  | 0.0007  | 0.5492  |
| piperidine | 34.342  | 86.0970  | 1.7648  | 0.0008  | 0.4720  |
| 4-Aminomethylcyclohexanecarboxylic acid | 34.1260 | 158.1176  | 1.7611  | 0.0038  | 0.0993  |
| Pipecolic acid | 34.061  | 130.0864  | 1.6695  | 0.0159  | 0.1354  |
| 3-(N-Nitrosomethylamino)propionitrile | 33.517  | 114.0665  | 1.6644  | 0.0002  | 0.6233  |
| DL-2-Aminooctanoic acid | 229.663 | 160.1332  | 1.4147  | 0.0251  | 0.4783  |
| Sphinganine | 398.038 | 302.3052  | 1.3867  | 0.0119  | 0.5381  |
| Vigabatrin | 55.184  | 130.0864  | 1.4384  | 0.0346  | 0.4920  |
| 2,8-Dihydroxyquinoline-beta-D-glucuronide | 216.697 | 338.0869  | 1.7712  | 0.0022  | 0.0913  |
| Difenoconazole | 440.554 | 406.0720  | 1.4183  | 0.0049  | 0.8597  |
| Phthalic anhydride | 437.880 | 149.0234  | 1.4427  | 0.0037  | 0.9246  |
| 1-Lauroyl-2-hydroxy-sn-glycero-3-phosphocholine | 367.017 | 440.2770  | 1.8140  | 0.0000  | 0.0026  |
| 5-Hydroxy-6-methoxyindole glucuronide | 228.260 | 340.1026  | 1.6578  | 0.0181  | 0.0611  |
| Bufadienolide | 372.469  | 355.2630  | 1.6919  | 0.0090  | 0.0942  |
| (3a,5b,7a)-23-carboxy-7-hydroxy-24-norcholan-3-yl, b-D-Glucopyranosiduronic acid | 370.224 | 569.3322  | 1.5900  | 0.0172  | 0.0347  |
| 2,5-Furandicarboxylic acid | 24.990  | 157.0150  | 1.1816  | 0.0215  | 0.7116  |
| Linoleamide | 504.506 | 280.2634  | 1.4341  | 0.0026  | 0.7240  |
| D-(+)-Turanose | 31.628 | 365.1053  | 1.6044  | 0.0034  | 0.0125  |
| Chol-11-Enic Acid | 372.573 | 373.2736  | 1.6881  | 0.0088  | 0.0975  |
| Citric acid | 69.384  | 193.0344  | 1.2712  | 0.0266  | 0.5789  |
| Asn Glu Leu Leu | 374.004 | 488.2679  | 1.7591  | 0.0008  | 0.3477  |
| Disulfiram | 450.470 | 297.0582  | 1.1108  | 0.0473  | 0.8786  |
| Trimethylaminoacetone | 233.185 | 116.1073  | 1.0957  | 0.0429  | 0.6701  |
| 5-Chola-3,11-dien-24-oic Acid | 369.410 | 357.2787  | 1.5926  | 0.0020  | 0.2594  |
| 2'-Deoxycytidine | 72.298  | 228.0978  | 1.4487  | 0.0118  | 0.6254  |
| Sphingofungin A | 381.490 | 432.3108  | 1.3975  | 0.0267  | 0.4051  |
| Cytidine | 61.883  | 244.0928  | 1.2202  | 0.0206  | 0.5559  |
| Homostachydrine | 207.278  | 158.1176  | 1.2209  | 0.0267  | 0.6384  |
| 5-Aminopentanamide | 216.140 | 117.1025  | 1.1408  | 0.0337  | 0.6459  |
| 13S-HpOTrE | 390.010 | 311.2216  | 1.8534  | 0.0001  | 0.0680  |
| Betonicine | 183.216 | 160.0968  | 1.7557  | 0.0025  | 0.2516  |
| Buprenorphine | 405.256 | 468.3085  | 1.6057  | 0.0003  | 0.5606  |
| Simvastatin acid | 475.055 | 437.2898  | 1.8609  | 0.0002  | 0.0304  |
| L-2-Amino-3-methylenehexanoic acid | 55.576  | 144.1019  | 1.8078  | 0.0057  | 0.0447  |
| 4-Carboxyphenylglycine | 253.282  | 196.0605  | 1.7575  | 0.0003  | 0.2055  |
| N4-Acetylcytidine | 181.540 | 286.1033  | 1.4770  | 0.0326  | 0.3699  |
| BENZALKONIUM | 422.911 | 304.2998  | 1.8293  | 0.0134  | 0.0257  |
| 7-Ketodeoxycholic acid | 500.635  | 424.3632  | 1.2251  | 0.0285  | 0.8610  |
| N-Nitroso-N-methylurethane | 53.517  | 133.0609  | 1.1027  | 0.0293  | 0.5750  |
| BISABOLOL ACETATE | 389.747 | 265.2162  | 1.8581  | 0.0001  | 0.0455  |
| trans-Aconitate | 69.384 | 175.0238  | 1.2104  | 0.0362  | 0.5620  |
| Methyl aminolevulinate | 80.505  | 146.0812  | 1.5406  | 0.0392  | 0.1174  |
| LysoPE(20:5(5Z,8Z,11Z,14Z,17Z)/0:0) | 428.524 | 500.2750  | 1.2425  | 0.0144  | 0.6754  |
| N,N-dimethyl-Safingol | 432.803 | 330.3365  | 1.4409  | 0.0215  | 0.4974  |
| N-Methylethanolamine phosphate | 30.860  | 156.0421  | 1.1125  | 0.0495  | 0.6615  |
| Se-Methylselenomethionine | 330.380 | 212.0198  | 1.6334  | 0.0270  | 0.0941  |
| Cholic Acid | 372.469 | 426.3213  | 1.7029  | 0.0054  | 0.1151  |
| N-arachidonoyl alanine | 372.372 | 376.2828  | 1.4807  | 0.0114  | 0.0558  |
| Carboxynorspermidine | 30.862  | 176.1394  | 1.4262  | 0.0016  | 0.5557  |

**TableS1-2Summary of differentially expressed metabolites inXJ compared with GJ**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **MS2 name** | **rt** | **mz** | **VIP** | **P-VALUE** | **FOLD CHANGE** |
| Choline | 30.543 | 104.1074  | 1.3999  | 0.0111  | 2.3180  |
| Acetone oxime | 91.734 | 74.0608  | 1.6923  | 0.0000  | 9.5813  |
| tetranor-PGEM-d6 | 241.398 | 335.1997  | 1.2018  | 0.0049  | 1.6962  |
| Sphinganine | 398.038 | 302.3052  | 1.4282  | 0.0008  | 1.7611  |
| Arginine | 29.789 | 175.1190  | 1.5491  | 0.0001  | 2.2398  |
| 2-Acetylpyrazine | 27.840 | 123.0612  | 1.1761  | 0.0424  | 1.4375  |
| Valine | 52.470 | 118.0865  | 1.1395  | 0.0213  | 1.3945  |
| 6-Hydroxy-5-methoxyindole glucuronide | 213.715 | 340.1025  | 1.5081  | 0.0009  | 9.9496  |
| Urate-3-ribonucleoside | 177.639 | 301.0778  | 1.3208  | 0.0056  | 4.5951  |
| Nitroethane | 240.660 | 76.0400  | 1.0828  | 0.0196  | 1.2628  |
| 4-Oxoproline | 30.864  | 130.0500  | 1.2055  | 0.0102  | 1.2700  |
| DL-Stearoylcarnitine | 479.233 | 428.3734  | 1.4858  | 0.0003  | 2.8419  |
| gamma-Glutamylleucine | 204.707 | 261.1444  | 1.0947  | 0.0198  | 1.5240  |
| 6,9,12-Eicosatriynoic acid | 404.188 | 301.2161  | 1.5937  | 0.0005  | 5.9080  |
| 3-Buten-1-amine | 35.400 | 72.0815  | 1.2698  | 0.0043  | 1.4579  |
| Palmitoyl-L-carnitine | 448.579 | 400.3420  | 1.4919  | 0.0028  | 2.4235  |
| L-gamma-glutamyl-L-valine | 172.268 | 247.1287  | 1.3496  | 0.0024  | 1.6053  |
| O-ACETYL-L-CARNITINE | 34.073  | 204.1231  | 1.1379  | 0.0192  | 1.4795  |
| Linoelaidic Acid | 460.663 | 281.2474  | 1.3775  | 0.0167  | 3.5118  |
| Asperagenin | 444.835 | 449.3262  | 1.5337  | 0.0047  | 4.6455  |
| Acetylcarnitine | 65.936  | 204.1231  | 1.1856  | 0.0148  | 1.5032  |
| Phenylacetylglycine | 240.670 | 194.0812  | 1.0585  | 0.0220  | 1.3958  |
| phenylacetylglutamine | 226.226 | 265.1182  | 1.2924  | 0.0044  | 3.3176  |
| PC(0:0/20:4(5Z,8Z,11Z,14Z)) | 432.179 | 544.3400  | 1.0128  | 0.0438  | 1.3065  |
| Scalarin | 479.880 | 445.2948  | 1.6228  | 0.0090  | 76.5067  |
| PC(18:3(6Z,9Z,12Z)/0:0)[U] | 411.136 | 518.3244  | 1.0508  | 0.0391  | 1.3266  |
| Lysine | 26.965  | 147.1128  | 1.4544  | 0.0003  | 1.8684  |
| 9,12-octadecadienal | 481.097 | 265.2525  | 1.2036  | 0.0236  | 1.9838  |
| Petroselinic acid | 481.251 | 283.2630  | 1.1898  | 0.0242  | 1.7526  |
| gamma-Glutamyltyrosine | 182.892 | 311.1236  | 1.1835  | 0.0096  | 1.5645  |
| N,N-dimethyl-Safingol | 432.803 | 330.3365  | 1.5922  | 0.0000  | 3.3225  |
| Se-Methylselenomethionine | 330.380 | 212.0198  | 1.6910  | 0.0001  | 127.2338  |
| Elaidic carnitine | 456.356 | 426.3576  | 1.5940  | 0.0000  | 2.7530  |
| 1,25-dihydroxy-10,19-methano-23-oxavitamin D3 | 482.779 | 433.3312  | 1.2700  | 0.0343  | 15.1170  |
| cis-4-Hydroxy-D-proline | 87.828 | 132.0658  | 1.4301  | 0.0001  | 0.3483  |
| Trifluoperazine sulfoxide | 33.773 | 424.1672  | 1.7180  | 0.0000  | 0.0001  |
| Proline | 34.073 | 116.0709  | 1.0817  | 0.0198  | 0.7967  |
| piperidine | 34.342 | 86.0970  | 1.6740  | 0.0001  | 0.1221  |
| 17-phenyl trinor Prostaglandin E2 serinol amide | 390.015 | 460.2693  | 1.5545  | 0.0245  | 0.1875  |
| 5-AMINOPENTANOATE | 32.015 | 118.0865  | 1.1116  | 0.0168  | 0.8115  |
| 4-Aminomethylcyclohexanecarboxylic acid | 34.126 | 158.1176  | 1.5801  | 0.0047  | 0.1464  |
| Pipecolic acid | 34.061 | 130.0864  | 1.5144  | 0.0168  | 0.1475  |
| 3-(N-Nitrosomethylamino)propionitrile | 33.517 | 114.0665  | 1.4335  | 0.0005  | 0.6125  |
| Indoline | 175.538 | 120.0810  | 1.1078  | 0.0200  | 0.8012  |
| N,N-dimethyl-L-Valine | 192.917 | 146.1176  | 1.1137  | 0.0333  | 0.3621  |
| 3-Indoleacetic acid | 285.450 | 176.0706  | 1.6250  | 0.0028  | 0.1297  |
| Phenylalanine | 175.539 | 166.0863  | 1.1146  | 0.0189  | 0.8009  |
| Valdecoxib | 34.321  | 315.0797  | 1.6395  | 0.0002  | 0.0007  |
| Vigabatrin | 55.184  | 130.0864  | 1.5062  | 0.0173  | 0.3802  |
| Thelephoric acid | 36.205  | 353.0263  | 1.6259  | 0.0037  | 0.0026  |
| 3-Indolepropionic acid | 309.250 | 190.0862  | 1.4830  | 0.0482  | 0.0930  |
| Thiomorpholine 3-carboxylate | 42.204  | 148.0426  | 1.5785  | 0.0005  | 0.5267  |
| 1-Lauroyl-2-hydroxy-sn-glycero-3-phosphocholine | 367.017  | 440.2770  | 1.6111  | 0.0000  | 0.0397  |
| 5-Hydroxy-6-methoxyindole glucuronide | 228.260 | 340.1026  | 1.2893  | 0.0283  | 0.1717  |
| (+)-4,11-Eudesmadien-3-one | 329.876 | 219.1743  | 1.5824  | 0.0112  | 0.0900  |
| (3a,5b,7a)-23-carboxy-7-hydroxy-24-norcholan-3-yl, b-D-Glucopyranosiduronic acid | 370.224 | 569.3322  | 1.5161  | 0.0187  | 0.0574  |
| 2,5-Furandicarboxylic acid | 24.990  | 157.0150  | 1.6764  | 0.0001  | 0.1612  |
| Sphingosine-1-phosphate | 401.775 | 380.2559  | 1.1377  | 0.0222  | 0.8177  |
| (S,S)-Butane-2,3-diol | 3.744 | 73.0655  | 1.4823  | 0.0017  | 0.0866  |
| 2-Iodophenol methyl ether | 25.191  | 234.9611  | 1.7022  | 0.0005  | 0.0060  |
| 3-Guanidinopropanoate | 70.507  | 132.0769  | 1.5375  | 0.0078  | 0.3083  |
| 2-Pyrrolidinone | 72.327  | 86.0607  | 1.0434  | 0.0458  | 0.8153  |
| PE(18:2(9Z,12Z)/0:0) | 428.030 | 478.2929  | 1.5620  | 0.0000  | 0.4244  |
| Alpha-Pyrrolidinopropiophenone | 453.658 | 204.1383  | 1.2892  | 0.0060  | 0.6186  |
| Citric acid | 69.384 | 193.0344  | 1.4763  | 0.0031  | 0.3081  |
| PC(20:5(5Z,8Z,11Z,14Z,17Z)/0:0) | 432.000 | 542.3220  | 1.4049  | 0.0019  | 0.5993  |
| 1-heptadecanoyl-sn-glycero-3-phosphocholine | 463.041 | 510.3557  | 1.0855  | 0.0318  | 0.7247  |
| Acutifolane A | 383.963 | 263.1641  | 1.6446  | 0.0005  | 0.2597  |
| PC(17:1(9Z)/0:0) | 437.568 | 508.3400  | 1.0487  | 0.0406  | 0.7734  |
| D-Pantothenic acid | 186.448 | 220.1179  | 1.1979  | 0.0085  | 0.7100  |
| 2'-Deoxycytidine | 72.298 | 228.0978  | 1.4732  | 0.0035  | 0.5139  |
| Cytidine | 61.883 | 244.0928  | 1.4140  | 0.0061  | 0.4332  |
| LysoPE(15:0/0:0) | 416.226 | 440.2772  | 1.4596  | 0.0003  | 0.4587  |
| Prolyl-Hydroxyproline | 53.621 | 229.1183  | 1.6613  | 0.0001  | 0.3111  |
| Homostachydrine | 207.278 | 158.1176  | 1.4562  | 0.0056  | 0.4365  |
| 5-Aminopentanamide | 216.140 | 117.1025  | 1.7044  | 0.0006  | 0.0427  |
| 13S-HpOTrE | 390.010 | 311.2216  | 1.6959  | 0.0001  | 0.0295  |
| Betonicine | 183.216 | 160.0968  | 1.2459  | 0.0097  | 0.5089  |
| Buprenorphine | 405.256 | 468.3085  | 1.3898  | 0.0015  | 0.6158  |
| N-Methyl-2-oxoglutaramate | 33.799  | 160.0604  | 1.4110  | 0.0017  | 0.3967  |
| Simvastatin acid | 475.055 | 437.2898  | 1.6874  | 0.0002  | 0.0176  |
| L-2-Amino-3-methylenehexanoic acid | 55.576  | 144.1019  | 1.5510  | 0.0068  | 0.0948  |
| 4-Carboxyphenylglycine | 253.282 | 196.0605  | 1.4660  | 0.0000  | 0.1355  |
| N-Cinnamoylglycine | 273.930 | 206.0812  | 1.5242  | 0.0056  | 0.3279  |
| N4-Acetylcytidine | 181.540 | 286.1033  | 1.3327  | 0.0356  | 0.3863  |
| Taccagenin | 486.129 | 447.3104  | 1.1463  | 0.0219  | 0.4783  |
| BENZALKONIUM | 422.911 | 304.2998  | 1.6639  | 0.0136  | 0.0293  |
| BISABOLOL ACETATE | 389.747  | 265.2162  | 1.6992  | 0.0001  | 0.0330  |
| Proline-hydroxyproline | 34.074  | 229.1183  | 1.5990  | 0.0003  | 0.3438  |
| Asn Asp Gly Thr | 33.528  | 406.1567  | 1.6745  | 0.0020  | 0.0006  |
| trans-Aconitate | 69.384  | 175.0238  | 1.4937  | 0.0056  | 0.2967  |
| 2-O-[2-O-(alpha-D-Mannopyranosyl)-alpha-D-glucopyranosyl]-3-phospho-D-glycerate | 36.209  | 511.1085  | 1.6400  | 0.0001  | 0.0068  |
| PE(18:1(9Z)/0:0) | 454.460 | 480.3086  | 1.1946  | 0.0081  | 0.6941  |
| Methyl aminolevulinate | 80.505  | 146.0812  | 1.3737  | 0.0421  | 0.1366  |
| Lactamide | 30.811  | 90.0555  | 1.4419  | 0.0005  | 0.6727  |
| PE(16:0/0:0) | 442.975 | 454.2928  | 1.2972  | 0.0105  | 0.6565  |
| PC(O-16:0/3:1(2E)) | 482.059 | 536.3714  | 1.1610  | 0.0129  | 0.6460  |
| 2-Methylpropanal oxime | 158.686 | 88.0763  | 1.3590  | 0.0107  | 0.7401  |
| Ser Glu | 39.713  | 235.0924  | 1.6758  | 0.0042  | 0.0013  |
| LysoPE(20:5(5Z,8Z,11Z,14Z,17Z)/0:0) | 428.524 | 500.2750  | 1.5602  | 0.0000  | 0.3516  |
| 3-Hydroxy-1-indanone | 175.539 | 149.0598  | 1.0637  | 0.0264  | 0.8153  |
| N-Methylethanolamine phosphate | 30.860  | 156.0421  | 1.6057  | 0.0020  | 0.3096  |
| PC(P-17:0/0:0) | 478.380 | 494.3606  | 1.2370  | 0.0064  | 0.7839  |

**Table S1-3Summary of differentially expressed metabolites inCJ compared with XJ**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **MS2 name** | **rt** | **mz** | **VIP** | **P-VALUE** | **FOLD CHANGE** |
| Trifluoperazine sulfoxide | 33.773 | 424.1672  | 1.6349  | 0.0000  | 13735.362 |
| Proline | 34.073 | 116.0709  | 1.1753  | 0.0080  | 1.2348  |
| piperidine | 34.342 | 86.0970  | 1.5542  | 0.0000  | 3.8642  |
| 17-phenyl trinor Prostaglandin E2 serinol amide | 390.015 | 460.2693  | 1.5608  | 0.0131  | 28.4509  |
| Met His Lys | 405.256 | 415.2114  | 1.2714  | 0.0171  | 1.9604  |
| Creatine | 34.066  | 132.0768  | 1.1939  | 0.0071  | 1.1314  |
| Indoline | 175.538  | 120.0810  | 1.3710  | 0.0006  | 1.3370  |
| Tryptophan | 201.763 | 205.0971  | 1.2364  | 0.0072  | 1.3042  |
| 3-Indoleacetic acid | 285.450 | 176.0706  | 1.5749  | 0.0013  | 6.2184  |
| Phenylalanine | 175.539 | 166.0863  | 1.3532  | 0.0008  | 1.3407  |
| Valdecoxib | 34.321  | 315.0797  | 1.5636  | 0.0000  | 1325.799 |
| Vigabatrin | 55.184  | 130.0864  | 1.1465  | 0.0285  | 1.2941  |
| Arginine | 29.789  | 175.1190  | 1.0325  | 0.0191  | 1.2663  |
| Thelephoric acid | 36.205 | 353.0263  | 1.5620  | 0.0001  | 367.3213  |
| Phe Trp Ser Thr | 240.884 | 540.2411  | 1.2245  | 0.0068  | 1.1559  |
| 2-Hydroxycinnamic acid | 95.345 | 165.0546  | 1.4849  | 0.0011  | 1.6394  |
| 3-Indolepropionic acid | 309.250 | 190.0862  | 1.3438  | 0.0085  | 4.1400  |
| Valine | 52.470  | 118.0865  | 1.3466  | 0.0013  | 1.5054  |
| Thiomorpholine 3-carboxylate | 42.204  | 148.0426  | 1.5609  | 0.0002  | 2.3626  |
| (+)-4,11-Eudesmadien-3-one | 329.876 | 219.1743  | 1.5902  | 0.0003  | 20.9292  |
| Tyrosine | 95.267  | 182.0812  | 1.5141  | 0.0003  | 1.7095  |
| 2,5-Furandicarboxylic acid | 24.990  | 157.0150  | 1.5533  | 0.0005  | 4.4137  |
| (S,S)-Butane-2,3-diol | 3.744  | 73.0655  | 1.3947  | 0.0001  | 8.4337  |
| Echinopsine | 167.249 | 160.0757  | 1.4186  | 0.0119  | 13.0002  |
| 2-Iodophenol methyl ether | 25.191  | 234.9611  | 1.6215  | 0.0005  | 138.0844  |
| 3-ketosphinganine | 409.805 | 300.2896  | 1.5180  | 0.0069  | 4.7121  |
| Nitroethane | 240.660 | 76.0400  | 1.4765  | 0.0019  | 1.5815  |
| Methioninesulfoxide | 60.580  | 166.0533  | 1.5025  | 0.0000  | 1.6451  |
| 3-Guanidinopropanoate | 70.507 | 132.0769  | 1.4533  | 0.0043  | 2.6618  |
| Clofop | 91.444  | 293.0543  | 1.1315  | 0.0072  | 1.7300  |
| 7-(1,3-Cyclohexadienyl)-5-hydroxy-2,6-dimethyl-2-hepten-4-one | 455.530 | 235.1692  | 1.5265  | 0.0007  | 1.9258  |
| PE(18:2(9Z,12Z)/0:0) | 428.030 | 478.2929  | 1.1414  | 0.0234  | 1.8139  |
| Alpha-Pyrrolidinopropiophenone | 453.658 | 204.1383  | 1.5531  | 0.0004  | 4.0133  |
| Citric acid | 69.384  | 193.0344  | 1.2666  | 0.0011  | 1.8788  |
| Melleolide M | 405.258 | 453.1674  | 1.2931  | 0.0122  | 2.0016  |
| PE(18:0/0:0) | 486.914 | 482.3242  | 1.1644  | 0.0150  | 1.6810  |
| PC(22:4(7Z,10Z,13Z,16Z)/0:0) | 463.870 | 572.3712  | 1.1110  | 0.0239  | 1.4475  |
| dodecanamide | 433.028 | 200.2009  | 1.0653  | 0.0366  | 1.3784  |
| PC(20:5(5Z,8Z,11Z,14Z,17Z)/0:0) | 432.000 | 542.3220  | 1.2852  | 0.0044  | 1.4050  |
| 1-heptadecanoyl-sn-glycero-3-phosphocholine | 463.041 | 510.3557  | 1.1780  | 0.0140  | 1.6414  |
| Acutifolane A | 383.963 | 263.1641  | 1.5966  | 0.0000  | 3.7332  |
| 3-Buten-1-amine | 35.400  | 72.0815  | 1.3591  | 0.0012  | 1.4931  |
| L-gamma-glutamyl-L-valine | 172.268 | 247.1287  | 1.0842  | 0.0223  | 1.3232  |
| PC(17:1(9Z)/0:0) | 437.568 | 508.3400  | 1.1515  | 0.0093  | 1.4085  |
| Methionine | 61.629  | 150.0584  | 1.5442  | 0.0003  | 3.1485  |
| 7C-aglycone | 280.930 | 299.1277  | 1.0453  | 0.0111  | 2.1381  |
| Calystegine A7 | 202.024 | 160.0950  | 1.2720  | 0.0028  | 1.3961  |
| 2'-Deoxycytidine | 72.298  | 228.0978  | 1.0554  | 0.0271  | 1.2169  |
| LysoPE(15:0/0:0) | 416.226 | 440.2772  | 1.3257  | 0.0016  | 2.2211  |
| Prolyl-Hydroxyproline | 53.621  | 229.1183  | 1.5978  | 0.0000  | 3.3940  |
| Homostachydrine | 207.278 | 158.1176  | 1.0620  | 0.0154  | 1.4627  |
| 5-Aminopentanamide | 216.140 | 117.1025  | 1.6239  | 0.0003  | 15.1205  |
| PC(18:0/0:0) | 485.135 | 524.3713  | 1.2745  | 0.0048  | 1.6596  |
| 13S-HpOTrE | 390.010 | 311.2216  | 1.4054  | 0.0002  | 2.3048  |
| Asperagenin | 444.835 | 449.3262  | 1.4556  | 0.0000  | 3.0211  |
| 3-methyl sulfolene | 91.431  | 133.0334  | 1.0904  | 0.0101  | 1.8341  |
| Serotonin | 167.279 | 177.1023  | 1.4151  | 0.0103  | 12.4543  |
| N-Methyl-2-oxoglutaramate | 33.799  | 160.0604  | 1.3246  | 0.0008  | 2.1886  |
| Simvastatin acid | 475.055 | 437.2898  | 1.0492  | 0.0395  | 1.7334  |
| LysoPC(18:2(9Z,12Z)) | 427.910 | 520.3400  | 1.2524  | 0.0298  | 1.5971  |
| PC(22:6(4E,7E,10E,13E,16E,19E)/0:0)[U] | 447.826 | 568.3377  | 1.1806  | 0.0115  | 1.5667  |
| N-Cinnamoylglycine | 273.930 | 206.0812  | 1.2662  | 0.0410  | 2.3565  |
| 1-(8Z,11Z,14Z-eicosatrienoyl)-sn-glycero-3-phosphocholine | 447.777 | 546.3557  | 1.2904  | 0.0052  | 1.6940  |
| Phenylacetylglycine | 240.670 | 194.0812  | 1.5013  | 0.0001  | 1.7774  |
| phenylacetylglutamine | 226.226 | 265.1182  | 1.3535  | 0.0002  | 2.5848  |
| Taccagenin | 486.129 | 447.3104  | 1.3959  | 0.0000  | 5.3180  |
| PC(7:0/O-8:0) | 419.297 | 482.3242  | 1.2896  | 0.0100  | 1.7864  |
| Proline-hydroxyproline | 34.074  | 229.1183  | 1.5391  | 0.0000  | 2.7936  |
| C16 Sphingosine | 370.144 | 272.2582  | 1.5261  | 0.0057  | 4.2482  |
| Asn Asp Gly Thr | 33.528  | 406.1567  | 1.5894  | 0.0007  | 970.4232  |
| Phytosphingosine | 364.543 | 318.3002  | 1.2049  | 0.0359  | 2.1468  |
| Lysine | 26.965  | 147.1128  | 1.3119  | 0.0012  | 1.4616  |
| trans-Aconitate | 69.384  | 175.0238  | 1.3093  | 0.0017  | 1.8939  |
| 4'-Apo-beta,psi-caroten-4'-al | 462.265 | 483.3645  | 1.3044  | 0.0046  | 1.4081  |
| 2-O-[2-O-(alpha-D-Mannopyranosyl)-alpha-D-glucopyranosyl]-3-phospho-D-glycerate | 36.209  | 511.1085  | 1.5121  | 0.0107  | 140.6532  |
| PC(16:0/0:0)[U] | 438.421 | 496.3400  | 1.2190  | 0.0245  | 1.4949  |
| 2'-Aminoacetophenone | 95.476  | 136.0757  | 1.5050  | 0.0013  | 1.6035  |
| Indole | 202.026 | 118.0654  | 1.1413  | 0.0199  | 1.1980  |
| PE(18:1(9Z)/0:0) | 454.460 | 480.3086  | 1.0017  | 0.0379  | 1.3939  |
| 4-Deoxytetronic acid | 92.612  | 87.0447  | 1.0929  | 0.0132  | 1.5923  |
| Lactamide | 30.811  | 90.0555  | 1.4442  | 0.0001  | 1.5872  |
| PE(16:0/0:0) | 442.975 | 454.2928  | 1.1777  | 0.0204  | 1.6550  |
| PC(O-16:0/3:1(2E)) | 482.059 | 536.3714  | 1.3290  | 0.0009  | 1.8360  |
| 2-Methylpropanal oxime | 158.686 | 88.0763  | 1.3271  | 0.0348  | 1.9594  |
| Ser Glu | 39.713  | 235.0924  | 1.6004  | 0.0009  | 1124.6477  |
| LysoPE(20:5(5Z,8Z,11Z,14Z,17Z)/0:0) | 428.524 | 500.2750  | 1.2409  | 0.0050  | 1.9209  |
| 2-hydroxy-butanoic acid | 92.531  | 105.0550  | 1.2542  | 0.0019  | 1.7167  |
| 3-Hydroxy-1-indanone | 175.539  | 149.0598  | 1.3405  | 0.0011  | 1.3196  |
| N-Methylethanolamine phosphate | 30.860  | 156.0421  | 1.2921  | 0.0100  | 2.1365  |
| L-Arginine | 29.002  | 197.1010  | 1.0112  | 0.0019  | 1.9071  |
| 1,25-dihydroxy-10,19-methano-23-oxavitamin D3 | 482.779 | 433.3312  | 1.2022  | 0.0001  | 4.8398  |
| 1,25-Dihydroxy-24-oxo-16-ene-vitamin D3 | 485.535 | 429.2999  | 1.4311  | 0.0000  | 7.5280  |
| Acetone oxime | 91.734 | 74.0608  | 1.6147  | 0.0000  | 0.1406  |
| 4-(Trimethylammonio)but-2-enoate | 34.045 | 144.1019  | 1.3229  | 0.0088  | 0.4780  |
| O-Acetylethanolamine | 33.828 | 104.0710  | 1.1596  | 0.0097  | 0.6217  |
| Sphinganine | 398.038 | 302.3052  | 1.5114  | 0.0000  | 0.3056  |
| Palmitic amide | 522.632 | 256.2634  | 1.0052  | 0.0268  | 0.7212  |
| 2-Acetylpyrazine | 27.840  | 123.0612  | 1.0578  | 0.0312  | 0.6925  |
| Docosahexaenoic Acid ethyl ester | 426.620 | 357.2786  | 1.3820  | 0.0332  | 0.1397  |
| Difenoconazole | 440.554 | 406.0720  | 1.0284  | 0.0229  | 0.8755  |
| Phthalic anhydride | 437.880 | 149.0234  | 1.1404  | 0.0094  | 0.9299  |
| 5-Hydroxy-6-methoxyindole glucuronide | 228.260 | 340.1026  | 1.3994  | 0.0076  | 0.3558  |
| Bufadienolide | 372.469 | 355.2630  | 1.3457  | 0.0386  | 0.1607  |
| Linoleamide | 504.506 | 280.2634  | 1.1528  | 0.0114  | 0.6667  |
| D-(+)-Turanose | 31.628  | 365.1053  | 1.4356  | 0.0164  | 0.0057  |
| 3-keto Petromyzonol | 426.921 | 375.2893  | 1.3495  | 0.0427  | 0.1123  |
| Chol-11-Enic Acid | 372.573 | 373.2736  | 1.3438  | 0.0368  | 0.1656  |
| DL-Stearoylcarnitine | 479.233 | 428.3734  | 1.2694  | 0.0041  | 0.5359  |
| 6,9,12-Eicosatriynoic acid | 404.188 | 301.2161  | 1.6049  | 0.0005  | 0.0873  |
| Asn Glu Leu Leu | 374.004 | 488.2679  | 1.2101  | 0.0310  | 0.3190  |
| LysoPC(20:1(11Z)) | 505.592 | 550.3870  | 1.1241  | 0.0297  | 0.6030  |
| Palmitoyl-L-carnitine | 448.579 | 400.3420  | 1.1195  | 0.0358  | 0.5248  |
| Linoelaidic Acid | 460.663 | 281.2474  | 1.3387  | 0.0184  | 0.2920  |
| Betonicine | 183.216 | 160.0968  | 1.3607  | 0.0177  | 0.4944  |
| 3-Oxo-5-chola-7,9(11)-dien-24-oic Acid | 349.893 | 371.2579  | 1.5101  | 0.0114  | 0.0173  |
| 9,12-octadecadienal | 481.097 | 265.2525  | 1.1569  | 0.0271  | 0.5177  |
| Petroselinic acid | 481.251 | 283.2630  | 1.0238  | 0.0397  | 0.6246  |
| 3-Hydroxy-12-oxo-5-chol-6-en-24-oic Acid | 349.892 | 389.2685  | 1.5002  | 0.0098  | 0.0238  |
| N,N-dimethyl-Safingol | 432.803 | 330.3365  | 1.6133  | 0.0000  | 0.1497  |
| Se-Methylselenomethionine | 330.380 | 212.0198  | 1.6174  | 0.0001  | 0.0007  |
| Cholic Acid | 372.469 | 426.3213  | 1.3574  | 0.0250  | 0.1834  |
| N-arachidonoyl alanine | 372.372 | 376.2828  | 1.1716  | 0.0449  | 0.1030  |
| Elaidic carnitine | 456.356 | 426.3576  | 1.3634  | 0.0031  | 0.3910  |
| Carboxynorspermidine | 30.862  | 176.1394  | 1.1474  | 0.0101  | 0.5108  |