

Table S1. Significantly different metabolites in comparison groups of CS 300 d and 0 d based on the ANOVA test analysis and OPLS-DA analysis

| Lipid Types | Subclass | Compound Name | p value | VIP |
|-----------------------|----------|--------------------------|---------|--------|
| Glycerophospho lipids | LPC | LPC(18:1) | 0.0000 | 1.9095 |
| | OXPC | OxPC(16:0/20:3+2O(1Cyc)) | 0.0350 | 1.2924 |
| | PA | PA(18:1/18:1) | 0.0136 | 1.2782 |
| | PC | PC(16:0/18:2) | 0.0436 | 1.1576 |
| | | PC(18:0/27:0) | 0.0178 | 1.2869 |
| | PE | PE(22:6e/7:0) | 0.0030 | 1.6173 |
| | | PEtOH(13:1/20:1) | 0.0355 | 1.3255 |
| | | PEtOH(15:0/20:4) | 0.0019 | 1.5077 |
| | PEtOH | PEtOH(16:1/19:2) | 0.0044 | 1.5301 |
| | | PEtOH(24:0/24:0) | 0.0216 | 1.4232 |
| | | PEtOH(26:0/26:0) | 0.0005 | 1.7802 |
| | | PEtOH(26:0/26:1) | 0.0003 | 1.7829 |
| | | PEtOH(27:0/22:2) | 0.0277 | 1.3231 |
| | | PI(18:0/18:1) | 0.0369 | 1.2928 |
| | PI | PI(21:0/26:0) | 0.0037 | 1.4704 |
| | | PI(27:0/20:5) | 0.0035 | 1.6310 |
| | BMP | BMP(26:0/26:0) | 0.0003 | 1.7624 |
| | | BMP(4:0/18:1) | 0.0140 | 1.4313 |
| | HBMP | HBMP(12:0/12:0/22:0) | 0.0001 | 1.8129 |
| | | HBMP(12:0/20:3/20:3) | 0.0003 | 1.7459 |
| | | HBMP(14:0/14:0/20:1) | 0.0320 | 1.1174 |
| | | HBMP(14:0/14:0/22:1) | 0.0323 | 1.1212 |
| | | HBMP(14:0/18:0/18:0) | 0.0054 | 1.3995 |
| | | HBMP(14:1/18:0/18:0) | 0.0016 | 1.6940 |
| | | HBMP(14:1/18:1/18:1) | 0.0040 | 1.5297 |
| | | HBMP(16:0/16:0/16:2) | 0.0000 | 1.8964 |
| | | HBMP(16:0/16:0/20:3) | 0.0095 | 1.4202 |
| | | DGTS(16:3/24:4) | 0.0000 | 1.8724 |
| | DGTS | DGTS(18:1/26:4) | 0.0079 | 1.3275 |
| | | DGTS(20:2/26:4) | 0.0001 | 1.7253 |
| | | DGTS(24:0/27:0) | 0.0159 | 1.4930 |
| | | DGTS(24:2/26:4) | 0.0026 | 1.6183 |
| | | DGTS(25:0/22:4) | 0.0000 | 1.8737 |
| | | DGTS(25:0/24:2) | 0.0120 | 1.4501 |
| | | DGTS(26:1/26:1) | 0.0080 | 1.5213 |
| | | DGTS(26:2/22:5) | 0.0138 | 1.4632 |
| | | DGTS(26:2/26:4) | 0.0101 | 1.4764 |
| | | DGTS(27:0/16:2) | 0.0313 | 1.3777 |
| | | DGTS(27:0/18:3) | 0.0004 | 1.7755 |
| | | DGTS(27:0/18:4) | 0.0003 | 1.7422 |

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|---------------|------|---------------------|--------|--------|
| Glycerolipids | DAG | DGTS(27:0/20:5) | 0.0013 | 1.5642 |
| | | DGTS(27:0/22:3) | 0.0008 | 1.6398 |
| | | DGTS(27:0/22:4) | 0.0017 | 1.5721 |
| | | DGTS(27:0/24:1) | 0.0007 | 1.7644 |
| | | DGTS(27:0/24:2) | 0.0080 | 1.4864 |
| | | DGTS(27:0/26:1) | 0.0279 | 1.2956 |
| | | DGTS(27:0/26:2) | 0.0102 | 1.5257 |
| | | DGTS(8:0/22:6) | 0.0003 | 1.6620 |
| | | DAG(16:0/18:2) | 0.0188 | 1.3869 |
| | | DAG(18:0/18:1) | 0.0000 | 1.8875 |
| | SQDG | SQDG(20:0/26:1) | 0.0013 | 1.6513 |
| | | SQDG(23:0/23:0) | 0.0009 | 1.6939 |
| | | SQDG(27:0/15:1) | 0.0089 | 1.4291 |
| | TAG | TAG(12:0/12:0/12:1) | 0.0000 | 1.8986 |
| | | TAG(12:0/12:0/12:2) | 0.0000 | 1.8015 |
| | | TAG(12:0/16:3/18:0) | 0.0021 | 1.5204 |
| | | TAG(12:0/16:3/22:0) | 0.0057 | 1.5403 |
| | | TAG(12:0/21:2/21:2) | 0.0041 | 1.5550 |
| | | TAG(12:0/22:2/22:2) | 0.0005 | 1.6725 |
| | | TAG(12:1/13:1/18:1) | 0.0141 | 1.4104 |
| | | TAG(12:1/22:1/22:1) | 0.0012 | 1.5973 |
| | | TAG(12:3/12:3/13:0) | 0.0233 | 1.2201 |
| | | TAG(12:3/22:1/22:1) | 0.0004 | 1.7363 |
| | | TAG(13:1/22:3/22:3) | 0.0460 | 1.0631 |
| | | TAG(14:0/16:0/18:1) | 0.0342 | 1.1880 |
| | | TAG(14:0/16:0/18:2) | 0.0123 | 1.4265 |
| | | TAG(14:0/18:0/18:0) | 0.0021 | 1.5423 |
| | | TAG(14:0/18:1/18:2) | 0.0120 | 1.4227 |
| | | TAG(14:0/18:2/18:2) | 0.0346 | 1.2365 |
| | | TAG(14:0/20:1/20:1) | 0.0041 | 1.4754 |
| | | TAG(14:0/20:5/22:1) | 0.0357 | 1.1742 |
| | | TAG(14:0/22:1/22:1) | 0.0001 | 1.7810 |
| | | TAG(14:1/20:0/22:4) | 0.0002 | 1.7518 |
| | | TAG(14:1/22:2/22:2) | 0.0007 | 1.7077 |
| | | TAG(14:3/20:0/20:0) | 0.0180 | 1.4008 |
| | | TAG(14:3/22:3/22:4) | 0.0003 | 1.7498 |
| | | TAG(15:0/15:0/22:3) | 0.0000 | 1.8717 |
| | | TAG(15:0/21:5/22:3) | 0.0018 | 1.6166 |
| | | TAG(15:1/15:1/22:1) | 0.0000 | 1.9278 |
| | | TAG(15:1/21:4/21:5) | 0.0468 | 1.1203 |
| | | TAG(15:1/22:4/22:4) | 0.0145 | 1.4459 |
| | | TAG(15:2/19:0/21:5) | 0.0000 | 1.7963 |
| | | TAG(15:2/22:3/22:3) | 0.0243 | 1.3224 |
| | | TAG(15:2/22:3/22:4) | 0.0179 | 1.2432 |

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| TAG(15:3/15:3/19:2) | 0.0011 | 1.6971 |
| TAG(15:3/19:0/21:5) | 0.0018 | 1.5990 |
| TAG(15:3/21:4/21:4) | 0.0073 | 1.5060 |
| TAG(15:3/22:0/22:6) | 0.0470 | 1.1547 |
| TAG(15:3/22:1/22:7) | 0.0368 | 1.3049 |
| TAG(15:3/22:3/22:3) | 0.0010 | 1.6963 |
| TAG(15:3/22:4/22:4) | 0.0380 | 1.3230 |
| TAG(16:0/16:0/18:1) | 0.0000 | 1.9023 |
| TAG(16:0/16:0/18:2) | 0.0000 | 1.9265 |
| TAG(16:0/16:0/20:1) | 0.0080 | 1.4900 |
| TAG(16:0/16:0/22:1) | 0.0071 | 1.4049 |
| TAG(16:0/16:0/22:2) | 0.0352 | 1.3127 |
| TAG(16:0/17:3/20:6) | 0.0109 | 1.5202 |
| TAG(16:0/18:1/18:3) | 0.0049 | 1.4845 |
| TAG(16:0/19:1/19:1) | 0.0243 | 1.2954 |
| TAG(16:0/22:2/22:2) | 0.0011 | 1.6464 |
| TAG(16:1/18:2/18:2) | 0.0000 | 1.9601 |
| TAG(16:2/18:1/18:1) | 0.0038 | 1.6048 |
| TAG(16:2/18:2/18:2) | 0.0062 | 1.5700 |
| TAG(16:3/18:1/18:1) | 0.0015 | 1.6886 |
| TAG(16:3/20:0/22:5) | 0.0121 | 1.3462 |
| TAG(16:4/18:0/21:5) | 0.0003 | 1.7188 |
| TAG(16:4/20:1/20:1) | 0.0199 | 1.3961 |
| TAG(16:4/21:0/22:7) | 0.0056 | 1.5159 |
| TAG(16:5/19:0/19:0) | 0.0001 | 1.8058 |
| TAG(17:0/22:3/22:3) | 0.0185 | 1.3275 |
| TAG(17:1/17:1/21:5) | 0.0002 | 1.7347 |
| TAG(17:1/17:1/22:4) | 0.0075 | 1.4036 |
| TAG(17:1/19:0/20:6) | 0.0004 | 1.7056 |
| TAG(17:1/22:1/22:1) | 0.0014 | 1.5844 |
| TAG(17:2/17:2/20:0) | 0.0001 | 1.7462 |
| TAG(17:2/18:5/20:0) | 0.0042 | 1.4753 |
| TAG(17:2/19:1/22:7) | 0.0441 | 1.2971 |
| TAG(17:2/20:0/20:6) | 0.0014 | 1.5831 |
| TAG(17:2/20:0/22:6) | 0.0001 | 1.7896 |
| TAG(17:2/22:7/22:7) | 0.0016 | 1.6408 |
| TAG(17:3/18:5/20:0) | 0.0164 | 1.3253 |
| TAG(17:3/19:3/19:3) | 0.0098 | 1.4401 |
| TAG(17:3/19:3/20:2) | 0.0482 | 1.2329 |
| TAG(17:3/20:0/20:6) | 0.0004 | 1.7121 |
| TAG(17:3/21:0/22:7) | 0.0458 | 1.2940 |
| TAG(17:3/22:6/22:6) | 0.0250 | 1.3518 |
| TAG(18:0/19:0/20:6) | 0.0006 | 1.6339 |
| TAG(18:0/22:2/22:2) | 0.0127 | 1.3338 |

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|-------------|------|---------------------|--------|---------------------|--------|--------|
| Fatty acyls | ACar | TAG(18:1/18:1/22:7) | 0.0166 | 1.4327 | | |
| | | TAG(18:1/18:4/21:5) | 0.0219 | 1.4172 | | |
| | | TAG(18:1/18:5/19:3) | 0.0217 | 1.3103 | | |
| | | TAG(18:2/19:0/21:5) | 0.0492 | 1.1320 | | |
| | | TAG(18:2/21:5/22:0) | 0.0002 | 1.7813 | | |
| | | TAG(18:3/18:3/19:2) | 0.0017 | 1.6234 | | |
| | | TAG(18:3/19:0/20:6) | 0.0000 | 1.8070 | | |
| | | TAG(18:3/19:4/20:0) | 0.0096 | 1.4917 | | |
| | | TAG(18:3/20:0/22:5) | 0.0086 | 1.4375 | | |
| | | TAG(18:4/18:4/19:0) | 0.0292 | 1.2406 | | |
| | | TAG(18:4/18:4/19:1) | 0.0001 | 1.8513 | | |
| | | TAG(18:4/18:4/21:0) | 0.0278 | 1.3758 | | |
| | | TAG(18:4/19:0/20:6) | 0.0014 | 1.6094 | | |
| | | TAG(18:4/19:0/22:6) | 0.0002 | 1.7671 | | |
| | | TAG(18:4/19:2/21:4) | 0.0002 | 1.7316 | | |
| | | TAG(18:5/19:0/20:6) | 0.0062 | 1.3852 | | |
| | | TAG(18:5/20:0/21:2) | 0.0001 | 1.7826 | | |
| | | TAG(18:5/22:0/22:5) | 0.0016 | 1.5991 | | |
| | | TAG(19:0/19:3/20:6) | 0.0000 | 1.8423 | | |
| | | TAG(19:0/20:3/20:6) | 0.0003 | 1.7498 | | |
| | | TAG(19:0/21:4/21:4) | 0.0004 | 1.6569 | | |
| | | TAG(19:0/22:2/22:6) | 0.0002 | 1.7928 | | |
| | | TAG(19:1/19:1/22:6) | 0.0299 | 1.2536 | | |
| | | TAG(19:1/20:1/22:7) | 0.0011 | 1.6448 | | |
| | | TAG(19:1/21:5/21:5) | 0.0047 | 1.5956 | | |
| | | TAG(19:2/19:2/22:5) | 0.0475 | 1.1654 | | |
| | | TAG(19:2/20:3/20:6) | 0.0452 | 1.2902 | | |
| | | TAG(19:2/22:0/22:7) | 0.0000 | 1.8325 | | |
| | | TAG(19:3/20:0/20:5) | 0.0000 | 1.8342 | | |
| | | TAG(19:5/19:5/20:0) | 0.0164 | 1.3824 | | |
| | | TAG(20:0/20:4/21:5) | 0.0004 | 1.7123 | | |
| | | TAG(20:0/20:6/21:2) | 0.0003 | 1.7255 | | |
| | | TAG(20:0/22:2/22:5) | 0.0000 | 1.8685 | | |
| | | TAG(20:1/21:5/22:3) | 0.0001 | 1.8160 | | |
| | | TAG(20:3/20:3/20:3) | 0.0089 | 1.4520 | | |
| | | TAG(20:3/21:4/22:1) | 0.0002 | 1.7418 | | |
| | | TAG(20:5/20:5/21:4) | 0.0055 | 1.5277 | | |
| | | TAG(21:0/21:1/22:7) | 0.0009 | 1.6819 | | |
| | | Fatty acyls | ACar | ACar(24:2) | 0.0000 | 1.8776 |
| | | | FA | FA(18:1) | 0.0140 | 1.3921 |
| | | | FAHFA | FAHFA(2:0/16:1) | 0.0154 | 1.4275 |
| | | FAHFA(9:0/10:0) | | 0.0033 | 1.4245 | |
| | | Sphingolipids | Cer | Cer/ADS(d23:0/19:1) | 0.0341 | 1.3102 |
| | | | | Cer/AP(t18:0/24:0) | 0.0489 | 1.1544 |

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|-------------|------------|----------------------------|--------|--------|
| Glycolipids | HexCer | Cer/AP(t18:1/22:0) | 0.0371 | 1.2107 |
| | | HexCer/NS(d14:2/24:2) | 0.0096 | 1.3859 |
| | | HexCer/NS(d14:2/26:2) | 0.0033 | 1.5438 |
| | | HexCer/NS(d14:3/24:2) | 0.0012 | 1.6260 |
| | | HexCer/NS(d14:3/26:2) | 0.0103 | 1.4608 |
| | | HexCer/NS(d14:3/36:2) | 0.0008 | 1.6545 |
| | | HexCer/NS(d14:3/42:1) | 0.0004 | 1.6979 |
| | | HexCer/NS(d17:1/16:2) | 0.0030 | 1.6070 |
| | | HexCer/NS(d25:2/34:2) | 0.0008 | 1.6432 |
| | | HexCer/NS(d29:2/30:2) | 0.0003 | 1.6961 |
| | GlcADG | GlcADG(12:0/17:1) | 0.0192 | 1.3283 |
| | | GlcADG(14:0/14:0) | 0.0272 | 1.2478 |
| | | GlcADG(24:2/24:2) | 0.0253 | 1.2530 |
| | AcylGlcADG | AcylGlcADG(18:0/18:0/18:2) | 0.0009 | 1.6786 |

Table S2. Significantly different metabolites in comparison groups of NS 300 d and CS 300 d based on the ANOVA test analysis and OPLS-DA analysis

| Lipid Types | Subclass | Compound Name | p value | VIP |
|-----------------------|----------|--------------------------|---------|--------|
| Glycerophospho lipids | LPC | LPC(18:1) | 0.0015 | 2.7160 |
| | OxPE | OxPE(18:0/18:1+1O(1Cyc)) | 0.0482 | 1.9762 |
| | | OxPE(18:1/18:0+1O(1Cyc)) | 0.0426 | 1.9876 |
| | PEtOH | PEtOH(27:0/19:2) | 0.0418 | 2.0783 |
| | PA | PA(16:0/18:1) | 0.0273 | 2.1763 |
| | | DGTS(24:4/26:4) | 0.0286 | 2.1563 |
| | DGTS | DGTS(27:0/22:4) | 0.0024 | 2.6751 |
| | | DGTS(3:0/26:1) | 0.0458 | 2.0002 |
| | HBMP | HBMP(14:0/14:0/20:1) | 0.0248 | 2.1326 |
| | | HBMP(14:0/14:0/22:1) | 0.0049 | 2.5667 |
| | DAG | DAG(18:1/18:3) | 0.0474 | 2.0025 |
| | SQDG | SQDG(20:0/26:2) | 0.0382 | 2.0460 |
| | | TAG(14:0/21:0/22:7) | 0.0031 | 2.6315 |
| | | TAG(15:0/21:5/22:3) | 0.0105 | 2.4200 |
| Glycerolipids | TAG | TAG(16:3/21:0/22:7) | 0.0469 | 1.9771 |
| | | TAG(18:0/18:0/18:1) | 0.0487 | 1.9726 |
| | | TAG(18:1/18:1/18:2) | 0.0237 | 2.1732 |
| | | TAG(18:4/19:0/20:6) | 0.0299 | 2.0613 |
| | | TAG(19:0/22:2/22:6) | 0.0436 | 1.9985 |
| | | TAG(19:1/20:2/20:6) | 0.0491 | 2.0062 |
| | | TAG(20:0/20:6/21:2) | 0.0058 | 2.5333 |
| | | TAG(20:1/21:5/22:3) | 0.0460 | 1.9767 |
| | | Cer/AP(t18:1/26:0) | 0.0270 | 2.1145 |
| | | FA(20:0) | 0.0017 | 2.7489 |
| Fatty acyls | FA | FA(20:1) | 0.0126 | 2.4106 |
| | FAHFA | FAHFA(9:0/10:0) | 0.0014 | 2.7501 |
| glycolipids | GlcADG | GlcADG(22:0/23:0) | 0.0140 | 2.3035 |
| | | GlcADG(24:2/24:2) | 0.0209 | 2.2017 |