**Supplementary Table 2. Partial Spearman correlations between serum metabolites and cardiovascular disease risk factors in the Taizhou Imaging Study.**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Metabolites | BMI | Exercise | Smoking | SBP | HTDmed | HLP | DM | TC | TG | LDL-C | HDL-C | GLU | CYS-C |
| Alanine | 0.24\*\*\* | 0.04 | -0.08 | 0.09 | 0.14\*\* | 0.21\*\*\* | 0.17\*\*\* | 0.11\* | 0.39\*\*\* | 0.12\* | -0.17\*\*\* | 0.19\*\*\* | 0.04 |
| Asparagine | 0.01 | -0.03 | -0.04 | 0.02 | 0.07 | 0.10 | 0.00 | 0.11\* | 0.15\*\* | 0.12 | -0.06 | 0.03 | -0.01 |
| Glutamate | 0.24\*\*\* | 0.01 | 0.00 | 0.09 | 0.22\*\*\* | 0.22\*\*\* | 0.15\*\* | 0.13\* | 0.32\*\*\* | 0.23\*\*\* | -0.14\*\* | 0.09 | -0.03 |
| Glycine | -0.15\*\* | 0.01 | -0.01 | 0.03 | -0.03 | -0.04 | -0.03 | -0.04 | -0.05 | -0.03 | 0.03 | -0.08 | 0.04 |
| Histidine | 0.03 | 0.00 | -0.10 | -0.03 | 0.07 | -0.01 | -0.02 | -0.01 | 0.07 | 0.05 | -0.07 | -0.04 | -0.01 |
| Isoleucine | 0.23\*\*\* | -0.02 | -0.04 | 0.09 | 0.15\*\* | 0.20\*\*\* | 0.17\*\*\* | 0.04 | 0.47\*\*\* | -0.03 | -0.22\*\*\* | 0.11\* | 0.07 |
| Lysine | 0.24\*\*\* | 0.01 | -0.06 | 0.12\* | 0.18\*\*\* | 0.16\*\*\* | 0.13\*\* | 0.05 | 0.36\*\*\* | 0.01 | -0.22\*\*\* | 0.11\* | 0.07 |
| Leucine | 0.29\*\*\* | 0.02 | -0.06 | 0.14\*\* | 0.22\*\*\* | 0.30\*\*\* | 0.21\*\*\* | 0.14\*\* | 0.58\*\*\* | 0.08 | -0.24\*\*\* | 0.16\*\* | 0.08 |
| Phenylalanine | 0.16\*\*\* | -0.02 | -0.05 | 0.02 | 0.17\*\*\* | 0.12\* | 0.08 | 0.07 | 0.14\*\* | 0.07 | -0.11\* | -0.03 | 0.05 |
| Tyrosine | 0.19\*\*\* | 0.07 | -0.11 | 0.03 | 0.10 | 0.01 | 0.05 | -0.05 | 0.08 | 0.00 | -0.14\*\* | 0.11\* | 0.02 |
| Valine | 0.30\*\*\* | 0.03 | -0.07 | 0.10 | 0.17\*\*\* | 0.17\*\*\* | 0.16\*\*\* | 0.06 | 0.36\*\*\* | 0.02 | -0.17\*\*\* | 0.15\*\* | 0.03 |
| Glutamine | -0.11\* | 0.01 | -0.01 | -0.08 | 0.01 | -0.06 | -0.11\* | -0.07 | -0.02 | -0.02 | -0.05 | -0.01 | 0.00 |
| Formate | -0.05 | 0.03 | -0.04 | -0.08 | -0.03 | -0.04 | 0.06 | 0.00 | -0.07 | 0.05 | -0.11\* | 0.05 | -0.07 |
| Acetate | -0.02 | 0.00 | -0.01 | -0.07 | 0.08 | 0.03 | -0.01 | 0.04 | 0.14\*\* | 0.08 | -0.13\* | -0.02 | 0.05 |
| Creatine | 0.12\* | 0.01 | -0.06 | 0.03 | 0.09 | 0.07 | 0.11\* | 0.03 | 0.12\* | 0.04 | -0.12\* | 0.15\*\* | 0.01 |
| Glucose | 0.20\*\*\* | 0.04 | -0.08 | 0.08 | 0.13\*\* | 0.16\*\*\* | 0.35\*\*\* | 0.04 | 0.30\*\*\* | 0.04 | -0.21\*\*\* | 0.54\*\*\* | -0.02 |
| Pyruvate | 0.11\* | -0.06 | 0.00 | 0.11\* | 0.20\*\*\* | 0.19\*\*\* | 0.14\*\* | 0.11\* | 0.25\*\*\* | 0.16\*\* | -0.08 | 0.07 | 0.02 |
| Citrate | -0.09 | 0.00 | -0.03 | -0.07 | -0.03 | 0.01 | -0.04 | 0.06 | 0.01 | 0.08 | 0.02 | 0.01 | 0.11 |
| Succinate | -0.11\* | -0.02 | 0.04 | 0.01 | 0.05 | 0.08 | -0.01 | 0.05 | 0.07 | 0.04 | -0.01 | -0.10 | 0.06 |
| Fumarate | -0.09 | 0.01 | -0.07 | -0.07 | 0.01 | 0.06 | 0.01 | 0.08 | -0.12\* | -0.01 | 0.10 | 0.00 | 0.01 |
| Lactate | 0.19\*\*\* | -0.07 | -0.04 | 0.16\*\* | 0.18\*\*\* | 0.22\*\*\* | 0.14\*\* | 0.14\* | 0.25\*\*\* | 0.15\* | -0.08 | -0.01 | -0.02 |
| *N*-Acetylated Glycoproteins | 0.21\*\*\* | -0.05 | -0.07 | 0.12\* | 0.20\*\*\* | 0.29\*\*\* | 0.17\*\*\* | 0.14\*\* | 0.54\*\*\* | 0.09 | -0.28\*\*\* | 0.14\*\* | 0.11 |
| *O*-Acetylated Glycoproteins | -0.03 | 0.02 | -0.06 | -0.01 | 0.08 | 0.02 | -0.05 | -0.03 | 0.10\* | 0.00 | -0.09 | 0.00 | 0.01 |
| Acetoacetate | 0.26\*\*\* | 0.02 | -0.04 | 0.16\*\* | 0.20\*\*\* | 0.34\*\*\* | 0.24\*\*\* | 0.13\* | 0.74\*\*\* | 0.05 | -0.37\*\*\* | 0.13\* | 0.11 |
| Bile Acids | 0.17\*\*\* | 0.02 | -0.05 | 0.05 | 0.13\*\* | 0.32\*\*\* | 0.19\*\*\* | 0.17\*\* | 0.53\*\*\* | 0.14\* | -0.21\*\*\* | 0.13\* | 0.04 |
| Choline | 0.05 | -0.01 | 0.00 | 0.00 | 0.04 | 0.23\*\*\* | 0.03 | 0.26\*\*\* | 0.17\*\*\* | 0.21\*\*\* | 0.08 | 0.11\* | 0.03 |
| Glycerophosphocholine | -0.21\*\*\* | -0.06 | -0.01 | -0.02 | -0.05 | 0.09 | -0.07 | 0.18\*\*\* | -0.07 | 0.09 | 0.39\*\*\* | -0.01 | -0.07 |
| Phosphorylcholine | 0.04 | -0.02 | -0.01 | 0.00 | 0.05 | 0.23\*\*\* | 0.03 | 0.25\*\*\* | 0.21\*\*\* | 0.21\*\*\* | 0.09 | 0.12\* | -0.01 |
| Hypoxanthine | -0.03 | -0.06 | 0.02 | 0.02 | 0.07 | 0.11\* | 0.04 | 0.13\* | 0.00 | 0.07 | 0.03 | -0.11\* | 0.03 |
| Lipids (C=CC*H2*C=C) | 0.26\*\*\* | 0.00 | -0.06 | 0.13\* | 0.20\*\*\* | 0.39\*\*\* | 0.22\*\*\* | 0.22\*\*\* | 0.77\*\*\* | 0.13\* | -0.31\*\*\* | 0.15\*\* | 0.10 |
| Lipids (C*H*=CH) | 0.25\*\*\* | 0.00 | -0.07 | 0.13\* | 0.19\*\*\* | 0.39\*\*\* | 0.24\*\*\* | 0.21\*\*\* | 0.76\*\*\* | 0.11 | -0.29\*\*\* | 0.18\*\* | 0.10 |
| Lipids (C*H2*C=C) | 0.26\*\*\* | -0.01 | -0.07 | 0.16\*\* | 0.22\*\*\* | 0.36\*\*\* | 0.22\*\*\* | 0.18\*\*\* | 0.76\*\*\* | 0.07 | -0.32\*\*\* | 0.17\*\* | 0.13 |
| Lipids (C*H2*CH2COO) | 0.34\*\*\* | 0.01 | -0.05 | 0.18\*\* | 0.22\*\*\* | 0.37\*\*\* | 0.25\*\*\* | 0.16\*\* | 0.84\*\*\* | 0.07 | -0.39\*\*\* | 0.20\*\*\* | 0.12 |
| Lipids (C*H2*COO) | 0.29\*\*\* | 0.00 | -0.04 | 0.16\*\* | 0.22\*\*\* | 0.34\*\*\* | 0.22\*\*\* | 0.14\*\* | 0.75\*\*\* | 0.05 | -0.35\*\*\* | 0.16\*\* | 0.11 |
| Lipids (R-C*H2*) | 0.29\*\*\* | 0.00 | -0.06 | 0.16\*\* | 0.20\*\*\* | 0.38\*\*\* | 0.24\*\*\* | 0.18\*\*\* | 0.83\*\*\* | 0.07 | -0.32\*\*\* | 0.17\*\* | 0.12 |
| Lipids (R-C*H3*) | 0.19\*\*\* | -0.03 | -0.04 | 0.12\* | 0.17\*\*\* | 0.40\*\*\* | 0.20\*\*\* | 0.23\*\*\* | 0.73\*\*\* | 0.12 | -0.20\*\*\* | 0.15\*\* | 0.10 |
| Triglycerides | 0.23\*\*\* | -0.02 | -0.10 | 0.10 | 0.17\*\*\* | 0.21\*\*\* | 0.31\*\*\* | 0.09 | 0.41\*\*\* | 0.01 | -0.24\*\*\* | 0.25\*\*\* | 0.07 |
| Dimethylglycine | 0.01 | 0.00 | 0.00 | -0.01 | 0.07 | 0.03 | -0.06 | 0.04 | 0.09 | 0.09 | -0.12\* | 0.02 | 0.04 |

Abbreviations: BMI, body mass index; CYS-C, cystain-C; DM, diabetes mellitus; GLU, glucose; HTDmed, use of antihypertensive medications; HDL–C, high–density lipoprotein cholesterol; HLP, hyperlipidemia; IMT, carotid intima-media thickness; LDL–C, low–density lipoprotein cholesterol; SBP, systolic blood pressure; TC, total cholesterol; TGs, triglycerides. The significance threshold was set at \**P* <0.05, \*\**P* <0.01, and \*\*\**P* <0.001 after false discovery rate correction.