**Supplementary Table S1.** **Comparison of** **Alternative Healthy Eating Index 2010 (AHEI-2010) of T2DM cases and controls.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Variables** | **T2DM** | **Control** | ***P*** |
| Subjects, n | 50 | 50 |  |
| AHEI-2010 | 38.50 (32.50, 44.13) | 44.50 (38.00, 48.50) | <0.001 |
| AHEI-2010 scores range | 20.50-48.50 | 26.50-58.50 |  |
| Component of AHEI-2010 scores |  |  |  |
| Vegetables | 8.00 (8.00, 8.00) | 10.00 (8.00, 10.00) | <0.001 |
| Fruit | 0.00 (0.00, 4.00) | 4.00 (2.00, 8.00) | <0.001 |
| Whole grains | 10.00 (6.00, 10.00) | 10.00 (6.00, 10.00) | 0.863 |
| Nuts and legumes | 7.45 (4.00, 10.00) | 10.00 (2.00, 10.00) | 0.461 |
| Red and processed meat | 8.00 (8.00, 8.00) | 8.00 (8.00, 8.00) | 0.783 |
| EPA+DHA | 2.00 (0.00, 2.00) | 2.00 (0.00, 2.00) | 0.938 |
| Polyunsaturated fatty acids | 0.00 (0.00, 0.00) | 0.00 (0.00, 0.00) | 0.989 |
| Sodium | 2.00 (0.00, 4.50) | 2.00 (2.00, 4.00) | 0.311 |
| Alcohol | 2.39 (2.50, 2.50) | 2.50 (2.50, 2.50) | 0.128 |

AHEI-2010, Alternative Healthy Eating Index 2010; EPA+DHA, Eicosapentaenoic Acid + Docose Hexaenoie Acid.

**Supplementary Table S2.** **Association of short-chain fatty acid levels with FPG.**

|  |  |  |  |
| --- | --- | --- | --- |
|  | β (95% CI) | | |
|  | Model1 | Model2 | Model3 |
| Acetic acid |  |  |  |
| T1 | Reference | Reference | Reference |
| T2 | -1.991 (-3.368, -0.614) | -2.075 (-3.575, -0.576) | -2.072 (-3.607, -0.537) |
| T3 | -1.893 (-3.270, -0.516) | -2.076 (-3.474, -0.678) | -2.130 (-3.588, -0.673) |
| Propionic acid |  |  |  |
| T1 | Reference | Reference | Reference |
| T2 | -1.038 (-2.471, 0.396) | -0.906 (-2.349, 0.536) | -0.912 (-2.395, 0.570) |
| T3 | -0.758 (-2.191, 0.676) | -1.421 (-2.931, 0.090) | -1.480 (-3.031, 0.072) |
| Isobutyric acid |  |  |  |
| T1 | Reference | Reference | Reference |
| T2 | 0.202 (-1.240, 1.644) | 0.484 (-0.971, 1.940) | 0.497 (-1.012, 2.005) |
| T3 | 0.742 (-0.700, 2.184) | 1.329 (-0.121, 2.780) | 1.301 (-0.219, 2.821) |
| Butyric acid |  |  |  |
| T1 | Reference | Reference | Reference |
| T2 | -1.963 (-3.351, -0.576) | -1.253 (-2.692, 0.186) | -1.409 (-2.953, 0.136) |
| T3 | -1.584 (-2.971, -0.196) | -1.206 (-2.619, 0.206) | -1.322 (-2.783, 0.140) |
| Isovaleric acid |  |  |  |
| T1 | Reference | Reference | Reference |
| T2 | 0.194 (-1.244, 1.632) | 0.102 (-1.347, 1.552) | 0.085 (-1.410, 1.579) |
| T3 | 0.891 (-0.547, 2.329) | 1.338 (-0.106, 2.781) | 1.323 (-0.191, 2.838) |
| Valeric acid |  |  |  |
| T1 | Reference | Reference | Reference |
| T2 | 0.286 (-1.162, 1.733) | 0.188 (-1.334, 1.710) | 0.220 (-1.361, 1.801) |
| T3 | 0.420 (-1.028, 1.867) | 0.473 (-0.993, 1.940) | 0.431 (-1.150, 2.012) |
| Caproic acid |  |  |  |
| T1 | Reference | Reference | Reference |
| T2 | 0.234 (-1.211, 1.679) | 1.193 (-0.335, 2.721) | 1.155 (-0.441, 2.751) |
| T3 | -0.361 (-1.806, 1.084) | 0.446 (-1.067, 1.958) | 0.406 (-1.186, 1.997) |

Model1: no adjustment.

Model2: adjusted for age, WC, TG, gender, level of education, income, smoking, drinking, physical activity.

Model3: model2 + BMI, total energy, cholesterol, protein.

**Supplementary Table S3.** **Association of short-chain fatty acid levels with HOMA2-β.**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **β (95% CI)** | | |
|  | Model1 | Model2 | Model3 |
| Acetic acid |  |  |  |
| T1 | Reference | Reference | Reference |
| T2 | 31.475 (8.345, 54.606) | 36.656 (10.435, 62.878) | 36.595 (10.194, 62.996) |
| T3 | 26.275 (3.145, 49.406) | 31.982 (7.539, 56.425) | 34.647 (9.574, 59.720) |
| Propionic acid |  |  |  |
| T1 | Reference | Reference | Reference |
| T2 | 11.098 (-12.909, 35.105) | 10.745 (-14.677, 36.166) | 11.766 (-14.077, 37.610) |
| T3 | 3.783 (-20.224, 27.789) | 13.937 (-12.686, 40.559) | 14.234 (-12.813, 41.281) |
| Isobutyric acid |  |  |  |
| T1 | Reference | Reference | Reference |
| T2 | -6.481 (-30.558, 17.595) | -7.127 (-32.734, 18.480) | -8.098 (-34.187, 17.991) |
| T3 | -4.333 (-28.410, 19.744) | -14.423 (-39.951, 11.105) | -17.295 (-43.584, 8.994) |
| Butyric acid |  |  |  |
| T1 | Reference | Reference | Reference |
| T2 | 34.219 (11.431, 57.007) | 28.035 (3.512, 52.558) | 27.290 (1.060, 53.520) |
| T3 | 33.371 (10.583, 56.159) | 28.331 (4.248, 52.414) | 27.225 (2.401, 52.050) |
| Isovaleric acid |  |  |  |
| T1 | Reference | Reference | Reference |
| T2 | -8.557 (-32.603, 15.489) | -3.975 (-29.596, 21.645) | -3.473 (-29.424, 22.477) |
| T3 | -6.527 (-30.573, 17.519) | -13.643 (-39.150, 11.863) | -16.793 (-43.088, 9.502) |
| Valeric acid |  |  |  |
| T1 | Reference | Reference | Reference |
| T2 | -1.769 (-25.756, 22.218) | 2.415 (-24.035, 28.865) | 1.816 (-25.337, 28.970) |
| T3 | 9.689 (-14.298, 33.676) | 7.400 (-18.090, 32.890) | 5.822 (-21.334, 32.978) |
| Caproic acid |  |  |  |
| T1 | Reference | Reference | Reference |
| T2 | 15.518 (-8.172, 39.207) | 5.796 (-20.989, 32.582) | 4.470 (-23.164, 32.104) |
| T3 | 21.645 (-2.044, 45.334) | 12.811 (-13.710, 39.332) | 12.195 (-15.355, 39.744) |

Model1: no adjustment.

Model2: adjusted for age, WC, TG, gender, level of education, income, smoking, drinking, physical activity.

Model3: model2 + BMI, total energy, cholesterol, protein.

**Supplementary Table S4.** **Association of AHEI-2010 dietary scores with T2DM.**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **ORs (95% CI)** | | |
|  | Model1 | Model2 | Model3 |
| AHEI-2010 |  |  |  |
| Low (≤32.50) | Reference | Reference | Reference |
| High (>32.50) | 0.215 (0.092,0.505) | 0.220 (0.072, 0.671) | 0.196 (0.059, 0.646) |
| *P*-trend | 0.006 | 0.008 | 0.007 |

Model1: no adjustment.

Model2: adjusted for age, WC, TG, gender, level of education, income, smoking, drinking, physical activity.

Model3: model2 + BMI, total energy, cholesterol, protein.