**ONLINE SUPPLEMENTAL MATERIAL**

**Supplementary Table 1. Characteristics and frequencies of the genotyped SNPs in *FAD*S and *PPAR* in the study population (n 757).**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SNP** | **Location** | **Tagging SNPs in** | **Allele** (M/m) | **MM**  n | **Mm**  n | **mm**  n | **MAF**  (%) | **HWE**  (*P*) |
| rs1535 | *FADS2* intron | *Mainly FADS1* | A/G | 347 | 313 | 91 | 33 | 0.12 |
| rs174448 | *FADS2/3* | *FADS2 and FADS3* | A/G | 316 | 335 | 105 | 36 | 0.29 |
| rs1801282 | *PPARG2* |  | C/G | 573 | 168 | 13 | 13 | 0.86 |
| rs1800206 | *PPARA* |  | C/G | 670 | 82 | 3 | 6 | 0.78 |

*FADS*, fatty acid desaturase gene; HWE, Hardy-Weinberg equilibrium; M, major allele; m, minor allele; MAF, minor allele frequency; SNP, single nucleotide polymorphism.

**Supplementary Table 2. *APOE* genotype frequencies in the study population(n 734)\***

|  |  |  |
| --- | --- | --- |
| **Haplotype** | **n** | **%** |
| *E2/E2* | 6 | 1 |
| *E2*/*E3* | 97 | 13 |
| *E3*/*E3* | 415 | 57 |
| *E3*/*E4* | 172 | 23 |
| *E4/E4* | 23 | 3 |
| *E2*/*E4* | 21 | 3 |

*\*APOE* genotypes were determined by rs429358 and rs7412. None of the children was carrier of *APOE1*.

**Supplementary Table 3. Cardiometabolic blood marker concentrations according to *FADS* genotypes shown as raw values and adjusted differences\***

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Cardiometabolic marker** | **SNP** | **MM**† | | **Mm/mm**† | |  | **MM versus MM/mm**‡ | | |
|  |  | **Mean** | **SD** | **Mean** | **SD** |  | **Difference** | **95% CI** | **P**† | |
| TG (mmol/L) | rs1535 | 0.69 | 0.30 | 0.70 | 0.31 |  | -0.02 | -0.05, 0.01 | 0.167 | |
|  | rs174448 | 0.69 | 0.30 | 0.71 | 0.32 |  | -0.04 | -0.07, -0.00 | 0.027 | |
| HDL cholesterol (mmol/L) | rs1535 | 1.46 | 0.31 | 1.43 | 0.28 |  | 0.03 | -0.02, 0.07 | 0.215 | |
|  | rs174448 | 1.47 | 0.32 | 1.43 | 0.28 |  | 0.04 | 0.00, 0.09 | 0.047 | |
| LDL cholesterol (mmol/L) | rs1535 | 2.37 | 0.58 | 2.30 | 0.56 |  | 0.04 | -0.04, 0.12 | 0.371 | |
|  | rs174448 | 2.35 | 0.59 | 2.33 | 0.56 |  | -0.01 | -0.09, 0.07 | 0.879 | |
| Glucose (mmol/L) | rs1535 | 5.25 | 0.48 | 5.18 | 0.43 |  | 0.06 | -0.00, 0.13 | 0.054 | |
|  | rs174448 | 5.25 | 0.49 | 5.19 | 0.43 |  | 0.06 | -0.01, 0.12 | 0.070 | |
| Insulin (pmol/L) | rs1535 | 46.9 | 23.0 | 48.5 | 25.2 |  | -1.5 | -4.1, 1.2 | 0.281 | |
|  | rs174448 | 46.3 | 22.9 | 48.8 | 25.0 |  | -2.2 | -4.8, 0.4 | 0.101 | |

M, major allele; m, minor allele; SNP, single nucleotide polymorphism.

\*For rs1535 *n* 328-347 (MM) and *n* 382-404 (Mm/mm) and for rs 174448 *n* 302-316 (MM) and *n* 413-440 (Mm/mm).

†Unadjusted values.

‡Based on linear mixed models adjusted for age, sex×puberty, height, BMI z-score, school, and class.

**Supplementary Table 4. Associations between n-3 LCPUFA and the cardiometabolic markers according to *PPARA* rs1800206 genotype\***

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Cardiometabolic marker** |  | **MM (*n* 562)** | | **Mm/mm (*n* 180)** | | | **P interaction** |
|  |  | **β** | **95% CI** | **β** | **95% CI** | **n-3 LCPUFA×rs180182†** | |
| Triacylglycerol (ln mmol/L) |  | -0.038 | -0.065, -0.011 | -0.021 | -0.089, 0.048 | 0.634 | |
| HDL cholesterol (mmol/L) |  | 0.013 | -0.010, 0.037 | -0.012 | -0.073, 0.050 | 0.449 | |
| LDL cholesterol (mmol/L) |  | 0.048 | 0.004, 0.093 | -0.011 | -0.129, 0.106 | 0.352 | |
| Glucose (mmol/L) |  | -0.030 | -0.066, 0.007 | -0.010 | -0.104, 0.083 | 0.701 | |
| Insulin (ln pmol/L)‡ |  | -0.053 | -0.086, -0.019 | -0.046 | -0.131, 0.040 | 0.884 | |

M, major allele; m, minor allele; n-3 LCPUFA, n-3 long-chain polyunsaturated fatty acids.

\*Estimates are adjusted slopes (β) and 95% in the given units per % n-3 LCPUFA in whole blood; insulin and triacylglycerol were ln-transformed and their estimates are given on logarithmic scale. n-3 LCPUFA is calculated as the sum of EPA and DHA (%) in wholeblood.

**†**P for interaction between n-3 LCPUFA and *PPARG2* rs180182 in linear mixed models with the cardiometabolic marker as outcome and adjusted for age, sex×puberty, height, BMI z-score, school, and class.

‡*n* 534 for MM and *n* 173 for Mm/mm.