

Supplemental material

Table S1. Fatty acids intake in women and men

| Variable | Total N = 587 | Women N = 415 | Men N = 172 | <i>p</i> -value |
|---------------|------------------|------------------|----------------|-----------------|
| SFA 4:0 (g) | 0.35 ± 0.38 | 0.33 ± 0.35 | 0.40 ± 0.44 | 0.075 |
| SFA 12:0 (g) | 0.44 ± 0.63 | 0.43 ± 0.69 | 0.48 ± 0.45 | 0.396 |
| SFA 17:0 (g) | 0.06 ± 0.45 | 0.06 ± 0.54 | 0.04 ± 0.06 | 0.530 |
| SFA 20:0 (g) | 0.05 ± 0.19 | 0.05 ± 0.22 | 0.05 ± 0.09 | 0.852 |
| SFA 22:0 (g) | 0.02 ± 0.06 | 0.03 ± 0.07 | 0.02 ± 0.06 | 0.476 |
| MUFA 20:1 (g) | 0.17 ± 0.82 | 0.18 ± 0.98 | 0.16 ± 0.15 | 0.882 |
| MUFA 22:1 (g) | 0.01 ± 0.04 | 0.01 ± 0.04 | 0.01 ± 0.04 | 0.724 |
| PUFA 18:4 (g) | 0.00 ± 0.08 | 0.01 ± 0.09 | 0.00 ± 0.02 | 0.714 |
| PUFA 20:5 (g) | 0.01 ± 0.04 | 0.01 ± 0.04 | 0.01 ± 0.03 | 0.762 |
| PUFA 22:5 (g) | 0.02 ± 0.04 | 0.02 ± 0.04 | 0.02 ± 0.04 | 0.872 |
| PUFA 22:6 (g) | 0.05 ± 0.13 | 0.05 ± 0.13 | 0.06 ± 0.13 | 0.565 |

Table S2. Baseline characteristics in the subgroup of subjects under cholecystectomy

| Variable | Total N = 24 | Women N = 18 | Men N = 6 | <i>p</i> -value |
|---------------------------|-----------------|-----------------|--------------|-----------------|
| Age (y) | 35.1±10.6 | 35.2±7.9 | 35.0±17.0 | 0.975 |
| BMI (kg/m ²) | 27.1±4.2 | 27.2±4.3 | 26.7±4.4 | 0.802 |
| Waist circumference (cm) | 86.0±11.2 | 83.1±10.1 | 93.3±11.4 | 0.774 |
| Body fat percentage (%) | 30.7±10.5 | 33.6±8.8 | 24.5±11.7 | 0.075 |
| Glucose (mg/dL) | 87.7±9.8 | 86.9±9.3 | 90.0±11.6 | 0.521 |
| Insulin (μU/mL) | 5.0±2.8 | 5.1±2.3 | 4.6±4.1 | 0.688 |
| HOMA-IR | 1.2±0.5 | 1.2±0.5 | 1.7±0.4 | 0.788 |
| Triglycerides (mg/dL) | 146.6±60.6 | 145.3±63.8 | 150.3±56.6 | 0.868 |
| Total cholesterol (mg/dL) | 159.6±52.7 | 169.2±47.9 | 132.5±60.7 | 0.147 |

| | | | | |
|--------------------------|-----------|------------|-----------|-------|
| HDL-cholesterol (mg/dL) | 40.0±14.0 | 42.1±15.2 | 34.1±8.2 | 0.241 |
| LDL-cholesterol (mg/dL) | 93.4±47.2 | 102.3±43.9 | 68.1±51.0 | 0.131 |
| VLDL-cholesterol (mg/dL) | 29.2±12.2 | 28.8±12.8 | 30.1±11.6 | 0.831 |

Table S3: Anthropometric, biochemical, and nutritional variables according to the rs17145750 SNV's of *MLXIPL* gene

| Variable | Women | | | Men | | |
|--------------------------|------------------|------------------|-----------------|----------------------|------------------|-----------------|
| | CC N = 342 | CT+TT N = 73 | <i>p</i> -value | CC N = 148 | CT+TT N = 24 | <i>p</i> -value |
| Age (y) | 42.06 ± 11.85 | 39.97 ± 11.17 | 0.170 | 39.30 ± 12.11 | 38.95 ± 12.4 | 0.898 |
| BMI (kg/m ²) | 31.13 ± 7.06 | 31.88 ± 6.07 | 0.405 | 29.17 ± 6.18 | 30.15 ± 5.27 | 0.467 |
| Waist circumference (cm) | 94.52 ± 16.22 | 96.71 ± 15.05 | 0.298 | 97.70 ± 16.48 | 100.42 ± 16.33 | 0.454 |
| Hip circumference (cm) | 110.78 ± 14.64 | 111.89 ± 11.98 | 0.550 | 104.66 ± 11.12 | 108.15 ± 11.16 | 0.157 |
| WHR | 0.84 ± 0.08 | 0.85 ± 0.08 | 0.527 | 0.91 ± 0.08 | 0.90 ± 0.07 | 0.445 |
| Fat mass (g) | 33.04 ± 14.23 | 34.42 ± 12.71 | 0.455 | 25.19 ± 14.27 | 27.22 ± 13.17 | 0.513 |
| Body fat percentage (%) | 40.04 ± 9.02 | 40.98 ± 7.48 | 0.414 | 27.73 ± 9.59 | 27.84 ± 9.52 | 0.957 |
| Glucose (mg/dl) | 94.00 ± 17.38 | 91.01 ± 14.82 | 0.176 | 96.06 ± 22.42 | 93.08 ± 10.91 | 0.524 |
| Insulin | 13.41 ± 12.47 | 14.98 ± 15.07 | 0.360 | 10.92 ± 13.25 | 8.48 ± 5.23 | 0.406 |
| HOMA-IR | 3.14 ± 3.11 | 3.56 ± 4.45 | 0.347 | 2.55 ± 3.10 | 1.97 ± 1.35 | 0.399 |
| Triglycerides (mg/dl) | 140.87 ± 76.01 | 129.28 ± 63.18 | 0.305 | 148.11 ± 69.23 | 156.85 ± 80.30 | 0.678 |
| CT (mg/dl) | 187.74 ± 40.99 | 186.99 ± 48.07 | 0.891 | 186.92 ± 40.89 | 190.93 ± 33.08 | 0.649 |
| VLDL-c (mg/dl) | 28.17 ± 15.20 | 25.85 ± 12.63 | 0.228 | 29.62 ± 13.84 | 31.37 ± 16.05 | 0.575 |
| LDL-c (mg/dl) | 114.77 ± 38.18 | 118.35 ± 40.47 | 0.476 | 116.57 ± 36.85 | 115.76 ± 26.47 | 0.918 |
| HDL-c (mg/dl) | 44.79 ± 14.38 | 42.78 ± 12.47 | 0.271 | 40.72 ± 12.34 | 43.80 ± 13.02 | 0.263 |
| Non-HDL-c (mg/dl) | 142.94 ± 41.65 | 144.20 ± 45.36 | 0.819 | 146.19 ± 42.32 | 147.13 ± 32.60 | 0.918 |
| Energy (kcal) | 1855.65 ± 711.48 | 1866.65 ± 737.54 | 0.909 | 2397.57 ± 1004.74 | 2263.07 ± 926.64 | 0.540 |
| Carbohydrates (kcal) | 917.39 ± 372.59 | 933.96 ± 411.22 | 0.745 | 1172.74 ± 512.33 | 1156.36 ± 480.77 | 0.884 |
| Proteins (kcal) | 323.72 ± 126.59 | 310.45 ± 115.99 | 0.429 | 419.44 ± 173.16 | 384.99 ± 173.78 | 0.368 |

| | | | | | | |
|--------------------------------|-----------------|-----------------|--------------|-----------------|-----------------|-------|
| Fat (kcal) | 613.22 ± 322.04 | 622.23 ± 291.14 | 0.833 | 805.38 ± 433.10 | 721.72 ± 381.58 | 0.375 |
| Carbohydrates (%) | 49.79 ± 9.63 | 49.98 ± 8.05 | 0.881 | 49.07 ± 9.42 | 51.66 ± 9.63 | 0.214 |
| Proteins (%) | 17.91 ± 4.87 | 17.13 ± 4.21 | 0.228 | 18.11 ± 4.24 | 17.23 ± 3.80 | 0.341 |
| Fat (%) | 32.19 ± 9.04 | 32.87 ± 7.67 | 0.564 | 32.81 ± 8.70 | 31.10 ± 8.05 | 0.370 |
| Saturated fat (g) | 22.93 ± 13.25 | 22.36 ± 11.27 | 0.743 | 30.22 ± 17.83 | 26.54 ± 15.75 | 0.342 |
| Monounsaturated fat (g) | 20.58 ± 11.46 | 22.22 ± 10.45 | 0.280 | 27.46 ± 16.49 | 24.85 ± 12.99 | 0.462 |
| Polyunsaturated fat (g) | 11.01 ± 7.77 | 12.24 ± 8.20 | 0.243 | 13.01 ± 10.26 | 12.78 ± 7.84 | 0.917 |
| SFA 4:0 (g) | 0.34 ± 0.36 | 0.31 ± 0.32 | 0.614 | 0.41 ± 0.46 | 0.34 ± 0.29 | 0.522 |
| SFA 6:0 (g) | 0.25 ± 0.26 | 0.24 ± 0.24 | 0.843 | 0.31 ± 0.35 | 0.27 ± 0.20 | 0.611 |
| SFA 8:0 (g) | 0.20 ± 0.20 | 0.22 ± 0.27 | 0.482 | 0.26 ± 0.28 | 0.22 ± 0.16 | 0.370 |
| SFA 10:0 (g) | 0.35 ± 0.34 | 0.35 ± 0.32 | 0.962 | 0.44 ± 0.42 | 0.41 ± 0.31 | 0.736 |
| SFA 12:0 (g) | 0.41 ± 0.48 | 0.53 ± 1.33 | 0.201 | 0.48 ± 0.47 | 0.46 ± 0.34 | 0.888 |
| SFA 14:0 (g) | 1.74 ± 1.42 | 1.64 ± 1.17 | 0.594 | 2.20 ± 1.77 | 2.08 ± 1.47 | 0.759 |
| SFA 16:0 (g) | 10.77 ± 6.24 | 11.06 ± 5.37 | 0.724 | 14.29 ± 8.94 | 13.36 ± 7.54 | 0.628 |
| SFA 17:0 (g) | 0.07 ± 0.60 | 0.03 ± 0.05 | 0.636 | 0.04 ± 0.06 | 0.03 ± 0.04 | 0.443 |
| SFA 18:0 (g) | 4.68 ± 30 | 4.88 ± 2.60 | 0.618 | 6.25 ± 4.23 | 5.85 ± 3.07 | 0.663 |
| SFA 20:0 (g) | 0.06 ± 0.24 | 0.04 ± 0.05 | 0.664 | 0.05 ± 0.10 | 0.03 ± 0.04 | 0.320 |
| SFA 22:0 (g) | 0.03 ± 0.07 | 0.02 ± 0.04 | 0.505 | 0.02 ± 0.06 | 0.01 ± 0.01 | 0.207 |
| MUFA 14:1 (g) | 0.06 ± 0.08 | 0.05 ± 0.05 | 0.341 | 0.08 ± 0.09 | 0.07 ± 0.08 | 0.629 |
| MUFA 16:1 (g) | 1.04 ± 0.73 | 1.01 ± 0.56 | 0.699 | 1.39 ± 1.17 | 1.33 ± 0.86 | 0.788 |
| MUFA 18:1 (g) | 17.96 ± 10.33 | 19.29 ± 9.05 | 0.329 | 24.04 ± 15.22 | 22.47 ± 11.88 | 0.630 |
| MUFA 20:1 (g) | 0.19 ± 1.09 | 0.13 ± 0.09 | 0.655 | 0.17 ± 0.16 | 0.16 ± 0.10 | 0.886 |
| MUFA 22:1 (g) | 0.01 ± 0.04 | 0.00 ± 0.01 | 0.003 | 0.01 ± 0.04 | 0.02 ± 0.06 | 0.293 |
| PUFA 18:2 (g) | 9.13 ± 6.83 | 10.43 ± 7.52 | 0.167 | 10.85 ± 9.54 | 10.83 ± 7.44 | 0.992 |
| PUFA 18:3 (g) | 0.89 ± 0.99 | 0.91 ± 0.58 | 0.858 | 1.05 ± 0.76 | 0.95 ± 0.42 | 0.524 |
| PUFA 18:4 (g) | 0.01 ± 0.11 | 0.00 ± 0.00 | 0.484 | 0.00 ± 0.02 | 0.01 ± 0.03 | 0.212 |
| PUFA 20:4 (g) | 0.13 ± 0.12 | 0.12 ± 0.09 | 0.565 | 0.16 ± 0.14 | 0.13 ± 0.09 | 0.331 |
| PUFA 20:5 (g) | 0.01 ± 0.04 | 0.01 ± 0.03 | 0.511 | 0.01 ± 0.03 | 0.02 ± 0.04 | 0.319 |
| PUFA 22:5 (g) | 0.02 ± 0.04 | 0.01 ± 0.02 | 0.035 | 0.01 ± 0.03 | 0.03 ± 0.05 | 0.230 |
| PUFA 22:6 (g) | 0.06 ± 0.14 | 0.03 ± 0.07 | 0.074 | 0.05 ± 0.12 | 0.08 ± 0.17 | 0.467 |
| Total n-3 (g) | 1.00 ± 1.13 | 0.98 ± 0.61 | 0.892 | 1.15 ± 0.78 | 1.11 ± 0.56 | 0.804 |
| Total n-6 (g) | 9.26 ± 6.86 | 10.55 ± 7.56 | 0.171 | 11.01 ± 9.56 | 10.96 ± 7.45 | 0.980 |

| | | | | | | |
|------------------------------|-----------------|-----------------|-------|-----------------|-----------------|-------|
| n-3:n-6 ratio | 10.97 ± 6.50 | 10.99 ± 5.37 | 0.983 | 11.22 ± 9.22 | 10.44 ± 5.18 | 0.686 |
| Diet cholesterol (mg) | 268.13 ± 187.21 | 267.98 ± 163.91 | 0.995 | 356.53 ± 272.69 | 278.13 ± 169.08 | 0.174 |
| Dietary fiber (g) | 24.09 ± 12.01 | 23.66 ± 12.71 | 0.792 | 29.18 ± 15.71 | 30.07 ± 10.41 | 0.790 |
| Soluble fiber (g) | 0.48 ± 0.82 | 0.41 ± 0.72 | 0.574 | 0.70 ± 1.00 | 0.62 ± 0.91 | 0.720 |
| Insoluble fiber (g) | 1.06 ± 1.85 | 0.87 ± 1.63 | 0.449 | 1.61 ± 2.28 | 1.37 ± 2.01 | 0.632 |
| Crude fiber (g) | 4.64 ± 14.26 | 3.56 ± 4.21 | 0.543 | 5.73 ± 15.15 | 3.59 ± 3.20 | 0.494 |
| Total sugar (g) | 72.55 ± 39.52 | 77.28 ± 41.89 | 0.381 | 83.94 ± 46.74 | 85.55 ± 39.24 | 0.874 |
| Added sugars (g) | 21.64 ± 21.33 | 21.83 ± 19.35 | 0.957 | 19.24 ± 15.79 | 22.11 ± 19.40 | 0.530 |
| Glucose (g) | 8.12 ± 7.05 | 7.73 ± 7.29 | 0.689 | 8.15 ± 7.39 | 9.12 ± 9.48 | 0.569 |
| Galactose (g) | 0.51 ± 4.11 | 0.05 ± 0.15 | 0.360 | 0.50 ± 3.59 | 0.01 ± 0.03 | 0.504 |
| Fructose (g) | 10.85 ± 9.81 | 9.74 ± 9.91 | 0.403 | 11.46 ± 11.33 | 12.03 ± 13.76 | 0.826 |
| Sucrose (g) | 19.33 ± 21.39 | 21.13 ± 20.01 | 0.529 | 18.40 ± 16.17 | 20.78 ± 19.58 | 0.519 |
| Lactose (g) | 9.18 ± 10.24 | 9.43 ± 11.09 | 0.861 | 14.79 ± 15.85 | 9.51 ± 9.69 | 0.116 |

Table S4: Anthropometric, biochemical, and nutritional variables according to the rs3812316 SNV's of *MLXIPL* gene

| Variable | Women | | | Men | | |
|--------------------------|------------------|------------------|-----------------|-------------------|------------------|-----------------|
| | CC N = 357 | CG+GG N = 58 | <i>p</i> -value | CC N = 151 | CG+GG N = 21 | <i>p</i> -value |
| Age (y) | 41.94 ± 11.99 | 40.44 ± 9.84 | 0.367 | 39.00 ± 11.97 | 40.19 ± 12.78 | 0.674 |
| BMI (kg/m ²) | 31.27 ± 6.92 | 31.95 ± 6.74 | 0.495 | 29.26 ± 6.21 | 31.11 ± 6.93 | 0.207 |
| Waist circumference (cm) | 94.92 ± 16.17 | 96.78 ± 15.76 | 0.418 | 97.88 ± 16.60 | 103.44 ± 18.97 | 0.160 |
| Hip circumference (cm) | 111.06 ± 14.32 | 112.11 ± 13.49 | 0.606 | 105.02 ± 11.14 | 107.90 ± 11.93 | 0.273 |
| WHR | 0.84 ± 0.07 | 0.86 ± 0.08 | 0.292 | 0.91 ± 0.08 | 0.94 ± 0.08 | 0.184 |
| Fat mass (g) | 33.28 ± 13.88 | 34.61 ± 14.52 | 0.513 | 25.38 ± 14.33 | 29.62 ± 16.41 | 0.214 |
| Body fat percentage (%) | 40.17 ± 8.89 | 40.85 ± 7.71 | 0.590 | 27.82 ± 9.66 | 28.91 ± 9.91 | 0.630 |
| Glucose (mg/dl) | 93.52 ± 17.4 | 91.98 ± 12.79 | 0.521 | 95.57 ± 22.48 | 95.04 ± 11.85 | 0.916 |
| Insulin | 13.57 ± 12.95 | 12.97 ± 11.86 | 0.746 | 10.75 ± 13.17 | 10.92 ± 6.75 | 0.957 |
| HOMA-IR | 3.20 ± 3.42 | 2.97 ± 2.79 | 0.640 | 2.50 ± 3.08 | 2.65 ± 1.87 | 0.845 |
| Triglycerides (mg/dl) | 142.27 ± 75.38 | 114.54 ± 52.70 | 0.007 | 147.68 ± 69.24 | 163.44 ± 78.84 | 0.398 |
| CT (mg/dl) | 189.04 ± 41.96 | 178.03 ± 42.75 | 0.065 | 188.00 ± 40.14 | 189.92 ± 31.19 | 0.833 |
| VLDL-c (mg/dl) | 28.45 ± 15.07 | 22.90 ± 10.53 | 0.001 | 29.53 ± 13.84 | 32.69 ± 15.76 | 0.338 |
| LDL-c (mg/dl) | 115.95 ± 39.17 | 112.29 ± 35.13 | 0.504 | 117.51 ± 36.10 | 114.32 ± 24.85 | 0.696 |
| HDL-c (mg/dl) | 44.64 ± 14.29 | 42.83 ± 12.31 | 0.363 | 40.95 ± 12.4 | 42.91 ± 13.14 | 0.501 |
| Non-HDL-c (mg/dl) | 144.40 ± 42.70 | 135.20 ± 38.53 | 0.124 | 147.04 ± 41.62 | 147.01 ± 31.15 | 0.997 |
| Energy (kcal) | 1865.10 ± 723.26 | 1886.00 ± 680.96 | 0.840 | 2444.41 ± 1009.83 | 2167.18 ± 726.92 | 0.227 |
| Carbohydrates (kcal) | 916.63 ± 379.37 | 967.10 ± 376.12 | 0.356 | 1197.39 ± 519.00 | 1098.23 ± 386.77 | 0.401 |
| Proteins (kcal) | 326.29 ± 127.40 | 298.27 ± 103.84 | 0.119 | 426.02 ± 175.12 | 380.47 ± 144.21 | 0.257 |
| Fat (kcal) | 620.91 ± 324.22 | 620.61 ± 278.66 | 0.995 | 820.98 ± 429.34 | 688.48 ± 339.30 | 0.178 |
| Carbohydrates (%) | 49.45 ± 9.54 | 51.44 ± 7.65 | 0.139 | 49.00 ± 9.23 | 51.24 ± 9.92 | 0.305 |
| Proteins (%) | 17.97 ± 4.80 | 16.25 ± 4.10 | 0.011 | 18.02 ± 4.14 | 17.65 ± 4.39 | 0.707 |

| | | | | | | |
|-------------------------|-----------------|-----------------|-------------------|-----------------|-----------------|--------------|
| Fat (%) | 32.46 ± 8.93 | 32.30 ± 7.61 | 0.894 | 32.97 ± 8.46 | 31.10 ± 8.41 | 0.345 |
| Saturated fat (g) | 23.21 ± 13.29 | 21.89 ± 10.95 | 0.483 | 30.85 ± 17.73 | 25.33 ± 13.96 | 0.173 |
| Monounsaturated fat (g) | 20.93 ± 11.64 | 21.82 ± 10.05 | 0.589 | 27.79 ± 16.34 | 24.84 ± 12.24 | 0.427 |
| Polyunsaturated fat (g) | 11.13 ± 7.94 | 13.16 ± 7.93 | 0.076 | 13.28 ± 10.27 | 12.05 ± 7.45 | 0.597 |
| SFA 4:0 (g) | 0.34 ± 0.36 | 0.30 ± 0.28 | 0.451 | 0.42 ± 0.46 | 0.30 ± 0.26 | 0.096 |
| SFA 6:0 (g) | 0.24 ± 0.260 | 0.24 ± 0.22 | 0.815 | 0.32 ± 0.35 | 0.24 ± 0.17 | 0.106 |
| SFA 8:0 (g) | 0.20 ± 0.20 | 0.22 ± 0.28 | 0.385 | 0.27 ± 0.28 | 0.21 ± 0.14 | 0.123 |
| SFA 10:0 (g) | 0.36 ± 0.34 | 0.35 ± 0.31 | 0.934 | 0.46 ± 0.42 | 0.37 ± 0.27 | 0.243 |
| SFA 12:0 (g) | 0.41 ± 0.48 | 0.55 ± 1.44 | 0.460 | 0.49 ± 0.47 | 0.42 ± 0.29 | 0.483 |
| SFA 14:0 (g) | 1.75 ± 1.41 | 1.62 ± 1.16 | 0.522 | 2.26 ± 1.78 | 1.96 ± 1.27 | 0.346 |
| SFA 16:0 (g) | 10.92 ± 6.34 | 10.96 ± 5.28 | 0.957 | 14.54 ± 8.92 | 13.07 ± 6.70 | 0.469 |
| SFA 17:0 (g) | 0.07 ± 0.59 | 0.03 ± 0.04 | 0.676 | 0.04 ± 0.06 | 0.03 ± 0.04 | 0.380 |
| SFA 18:0 (g) | 4.75 ± 3.05 | 4.79 ± 2.46 | 0.940 | 6.36 ± 4.20 | 5.67 ± 2.74 | 0.470 |
| SFA 20:0 (g) | 0.05 ± 0.24 | 0.05 ± 0.05 | 0.863 | 0.05 ± 0.10 | 0.03 ± 0.05 | 0.402 |
| SFA 22:0 (g) | 0.03 ± 0.07 | 0.02 ± 0.04 | 0.832 | 0.02 ± 0.06 | 0.01 ± 0.01 | 0.309 |
| MUFA 14:1 (g) | 0.06 ± 0.08 | 0.05 ± 0.05 | 0.149 | 0.08 ± 0.09 | 0.08 ± 0.08 | 0.864 |
| MUFA 16:1 (g) | 1.06 ± 0.74 | 0.94 ± 0.56 | 0.269 | 1.41 ± 1.17 | 1.38 ± 0.83 | 0.934 |
| MUFA 18:1 (g) | 18.26 ± 10.5 | 19.09 ± 8.75 | 0.576 | 24.39 ± 15.11 | 22.33 ± 11.2 | 0.550 |
| MUFA 20:1 (g) | 0.18 ± 1.06 | 0.13 ± 0.08 | 0.683 | 0.17 ± 0.16 | 0.13 ± 0.07 | 0.285 |
| MUFA 22:1 (g) | 0.01 ± 0.04 | 0.00 ± 0.00 | < 0.001 | 0.01 ± 0.04 | 0.01 ± 0.03 | 0.646 |
| PUFA 18:2 (g) | 9.23 ± 6.97 | 11.42 ± 7.61 | 0.033 | 11.11 ± 9.58 | 10.13 ± 7.18 | 0.652 |
| PUFA 18:3 (g) | 0.90 ± 0.98 | 0.92 ± 0.51 | 0.929 | 1.05 ± 0.75 | 0.94 ± 0.36 | 0.250 |
| PUFA 18:4 (g) | 0.01 ± 0.10 | 0 ± 0.01 | 0.567 | 0.00 ± 0.02 | 0.01 ± 0.02 | 0.651 |
| PUFA 20:4 (g) | 0.13 ± 0.12 | 0.11 ± 0.08 | 0.292 | 0.17 ± 0.13 | 0.1 ± 0.07 | 0.003 |
| PUFA 20:5 (g) | 0.01 ± 0.04 | 0.01 ± 0.03 | 0.508 | 0.01 ± 0.04 | 0.01 ± 0.02 | 0.515 |
| PUFA 22:5 (g) | 0.02 ± 0.04 | 0.01 ± 0.01 | 0.002 | 0.02 ± 0.04 | 0.01 ± 0.03 | 0.718 |
| PUFA 22:6 (g) | 0.06 ± 0.13 | 0.03 ± 0.05 | 0.018 | 0.06 ± 0.13 | 0.03 ± 0.10 | 0.355 |
| Total n-3 (g) | 1.02 ± 1.11 | 0.98 ± 0.54 | 0.815 | 1.17 ± 0.78 | 1.02 ± 0.39 | 0.380 |
| Total n-6 (g) | 9.37 ± 7.01 | 11.54 ± 7.64 | 0.035 | 11.28 ± 9.60 | 10.23 ± 7.19 | 0.631 |
| n-3:n-6 ratio | 10.84 ± 6.43 | 12.19 ± 5.95 | 0.144 | 10.93 ± 8.09 | 10.47 ± 5.46 | 0.804 |
| Diet cholesterol (mg) | 271.44 ± 187.16 | 254.41 ± 157.89 | 0.520 | 369.06 ± 270.48 | 250.74 ± 164.74 | 0.053 |
| Dietary fiber (g) | 24.06 ± 12.13 | 24.35 ± 12.11 | 0.869 | 29.60 ± 15.62 | 28.6 ± 9.710 | 0.776 |

| | | | | | | |
|----------------------------|---------------|---------------|-------|---------------|---------------|-------|
| Soluble fiber (g) | 0.44 ± 0.79 | 0.52 ± 0.79 | 0.496 | 0.69 ± 1.03 | 0.61 ± 0.66 | 0.727 |
| Insoluble fiber (g) | 0.99 ± 1.78 | 1.12 ± 1.87 | 0.611 | 1.6 ± 2.33 | 1.37 ± 1.54 | 0.662 |
| Crude fiber (g) | 4.68 ± 13.94 | 3.02 ± 1.71 | 0.374 | 5.63 ± 15.06 | 3.83 ± 3.21 | 0.586 |
| Total sugar (g) | 72.70 ± 40.64 | 77.18 ± 37.11 | 0.440 | 84.48 ± 47.11 | 87.95 ± 35.44 | 0.747 |
| Added sugars (g) | 22.30 ± 21.91 | 19.19 ± 14.74 | 0.392 | 19.39 ± 15.73 | 19.73 ± 19.13 | 0.940 |
| Glucose (g) | 8.00 ± 7.03 | 8.12 ± 7.39 | 0.913 | 8.08 ± 7.66 | 8.47 ± 7.87 | 0.829 |
| Galactose (g) | 0.49 ± 3.98 | 0.05 ± 0.16 | 0.421 | 0.49 ± 3.56 | 0.01 ± 0.03 | 0.540 |
| Fructose (g) | 10.61 ± 9.71 | 10.20 ± 10.07 | 0.773 | 11.17 ± 11.36 | 11.7 ± 13.17 | 0.845 |
| Sucrose (g) | 19.68 ± 21.84 | 19.00 ± 16.58 | 0.825 | 18.49 ± 16.37 | 22.66 ± 18.90 | 0.287 |
| Lactose (g) | 9.17 ± 10.41 | 9.34 ± 10.74 | 0.916 | 14.54 ± 15.54 | 11.93 ± 13.24 | 0.465 |

Table S5: Frequencies of dyslipidemias according to the rs17145750 and rs3812316 SNV's of *MLXIPL* gene in women

| | rs17145750 C>T | | | rs3812316 C>G | | |
|---------------------------------|----------------|-------|-----------------|---------------|-------|-----------------|
| | CC | CT+TT | <i>p</i> -value | CC | CG+GG | <i>p</i> -value |
| Hypercholesterolemia (%) | 34.7 | 31.9 | 0.684 | 36.4 | 24.1 | 0.075 |
| Elevated LDL-c (%) | 66.5 | 69.4 | 0.680 | 67.2 | 65.5 | 0.880 |
| Low HDL-C (%) | 39.5 | 45.8 | 0.355 | 40.6 | 41.4 | 1.000 |
| Hypertriglyceridemia (%) | 36.5 | 30.6 | 0.347 | 38.1 | 19.0 | 0.005 |

LDL-c: Low-density lipoprotein cholesterol, HDL-c: High-density lipoprotein cholesterol

Table S6: Frequencies of dyslipidemias according to the rs17145750 and rs3812316 SNV's of *MLXIPL* gene in men

| | rs17145750 C>T | | | rs3812316 C>G | | |
|---------------------------------|----------------|-------|-----------------|---------------|-------|-----------------|
| | CC | CT+TT | <i>p</i> -value | CC | CG+GG | <i>p</i> -value |
| Hypercholesterolemia (%) | 34.2 | 29.2 | 0.653 | 33.8 | 28.6 | 0.806 |
| Elevated LDL-c (%) | 68.2 | 66.7 | 1.000 | 69.3 | 71.4 | 1.000 |
| Low HDL-C (%) | 51.0 | 37.5 | 0.273 | 49.7 | 47.6 | 1.000 |
| Hypertriglyceridemia (%) | 41.6 | 45.8 | 0.824 | 40.4 | 52.4 | 0.348 |

LDL-c: Low-density lipoprotein cholesterol, HDL-c: High-density lipoprotein cholesterol

Table S7. Logistic regression models of hypertriglyceridemia in women

| | | B | <i>p</i>-value | OR | 95% CI | |
|---------|--------------------------------------|----------|-----------------------|-----------|-----------------------|-----------------------|
| | | | | | Inferior limit | Superior limit |
| Model 1 | HDL-cholesterol (mg/dL) | -0.066 | < 0.001 | 0.936 | 0.915 | 0.958 |
| | Constant | 2.472 | < 0.001 | 11.842 | | |
| Model 2 | Total cholesterol (mg/dL) | 0.019 | < 0.001 | 1.020 | 1.012 | 1.027 |
| | HDL-cholesterol (mg/dL) | -0.083 | < 0.001 | 0.921 | 0.898 | 0.945 |
| | Constant | -0.581 | 0.439 | 0.559 | | |
| Model 3 | Total cholesterol (mg/dL) | 0.021 | < 0.001 | 1.021 | 1.013 | 1.029 |
| | HDL-cholesterol (mg/dL) | -0.072 | < 0.001 | 0.930 | 0.906 | 0.955 |
| | Waist circumference (cm) | 0.040 | < 0.001 | 1.041 | 1.022 | 1.060 |
| | Constant | -5.204 | < 0.001 | 0.005 | | |
| | Glucose (mg/dL) | 0.030 | 0.026 | 1.030 | 1.004 | 1.057 |
| | Total cholesterol (mg/dL) | 0.021 | < 0.001 | 1.022 | 1.014 | 1.030 |
| Model 4 | HDL-cholesterol (mg/dL) | -0.072 | < 0.001 | 0.931 | 0.907 | 0.955 |
| | Waist circumference (cm) | 0.037 | < 0.001 | 1.038 | 1.018 | 1.058 |
| | Constant | -7.743 | < 0.001 | 0.000 | | |
| | Glucose (mg/dL) | 0.030 | 0.029 | 1.030 | 1.003 | 1.058 |
| | Total cholesterol (mg/dL) | 0.021 | < 0.001 | 1.021 | 1.013 | 1.030 |
| Model 5 | HDL-cholesterol (mg/dL) | -0.072 | < 0.001 | 0.931 | 0.907 | 0.955 |
| | Waist circumference (cm) | 0.039 | < 0.001 | 1.039 | 1.020 | 1.060 |
| | SNV's rs3812316 (CC <i>vs</i> CG+GG) | -1.042 | 0.020 | 0.353 | 0.147 | 0.846 |
| | Constant | -7.725 | < 0.001 | 0.000 | | |

Table S8. Logistic regression models of hypertriglyceridemia in men

| | | B | <i>p</i>-value | OR | 95% CI | |
|---------|---------------------------|----------|-----------------------|-----------|-----------------------|-----------------------|
| | | | | | Inferior limit | Superior limit |
| Model 1 | HDL-cholesterol (mg/dL) | -0.114 | < 0.001 | 0.892 | 0.849 | 0.939 |
| | Constant | 4.171 | < 0.001 | 64.754 | | |
| | Total cholesterol (mg/dL) | 0.022 | 0.001 | 1.023 | 1.010 | 1.036 |
| Model 2 | HDL-cholesterol (mg/dL) | -0.127 | < 0.001 | 0.881 | 0.833 | 0.932 |
| | Constant | 0.363 | 0.804 | 1.438 | | |
| | Total cholesterol (mg/dL) | 0.024 | 0.001 | 1.024 | 1.010 | 1.038 |
| Model 3 | HDL-cholesterol (mg/dL) | -0.125 | < 0.001 | 0.883 | 0.833 | 0.936 |
| | Protein intake (g) | -0.016 | 0.010 | 0.984 | 0.972 | 0.996 |
| | Constant | 1.716 | 0.293 | 5.564 | | |
| | Total cholesterol (mg/dL) | 0.021 | 0.003 | 1.021 | 1.007 | 1.035 |
| Model 4 | HDL-cholesterol (mg/dL) | -0.107 | < 0.001 | 0.898 | 0.846 | 0.953 |
| | Fat mass (kg) | 0.061 | 0.031 | 1.063 | 1.005 | 1.124 |
| | Protein intake (g) | -0.014 | 0.026 | 0.986 | 0.973 | 0.998 |
| | Constant | -0.333 | 0.862 | 0.717 | | |

Table S9. Multiple lineal regression of parameters associated with triglyceride levels in women

| | B | Standard error | 95% CI | <i>p</i>-value |
|---|----------|-----------------------|-----------------|-----------------------|
| <i>Model 1, R² = 18.9</i> | | | | |
| HDL-cholesterol | -0.006 | 0.001 | -0.008 – -0.005 | < 0.001 |
| <i>Model 2, R² = 32.2</i> | | | | |
| HDL-cholesterol | -0.007 | 0.001 | -0.008 – -0.006 | < 0.001 |
| Total cholesterol | 0.002 | 0.000 | 0.001 – 0.002 | < 0.001 |
| <i>Model 3, R² = 63.1</i> | | | | |
| HDL-cholesterol | -0.006 | 0.001 | -0.007 – -0.004 | < 0.001 |
| Total cholesterol | 0.002 | 0.000 | 0.001 – 0.002 | < 0.001 |
| Waist circumference | 0.004 | 0.001 | 0.002 – 0.005 | < 0.001 |
| <i>Model 4, R² = 64.3</i> | | | | |
| HDL-cholesterol | -0.006 | 0.001 | -0.007 – -0.004 | < 0.001 |
| Total cholesterol | 0.002 | 0.000 | 0.001 – 0.002 | < 0.001 |
| Waist circumference | 0.004 | 0.001 | 0.003 – 0.005 | < 0.001 |
| SNV's rs3812316 C/G | -0.073 | 0.028 | -0.127 – -0.019 | 0.008 |

HDL-cholesterol: High-density lipoprotein cholesterol, CI: Confidence Interval.

Table S10. Multiple lineal regression of parameters associated with triglyceride levels in men

| | B | Standard error | 95% IC | <i>p</i>-value |
|---|----------|-----------------------|-----------------|-----------------------|
| <i>Model 1, R² = 58.3</i> | | | | |
| HDL-cholesterol | -0.010 | 0.002 | -0.014 – -0.007 | < 0.001 |
| <i>Model 2, R² = 70.4</i> | | | | |
| HDL-cholesterol | -0.008 | 0.002 | -0.011 – -0.005 | < 0.001 |
| Body fat percentage | 0.008 | 0.002 | 0.005 – 0.012 | < 0.001 |
| <i>Model 3, R² = 74.0</i> | | | | |
| HDL-cholesterol | -0.008 | 0.002 | -0.011 – -0.005 | < 0.001 |
| Body fat percentage | 0.008 | 0.002 | 0.005 – 0.012 | < 0.001 |
| Albumin | 0.092 | 0.033 | 0.026 – 0.157 | 0.007 |
| <i>Model 4, R² = 77.6</i> | | | | |
| HDL-cholesterol | -0.007 | 0.001 | -0.010 – -0.004 | < 0.001 |
| Body fat percentage | 0.007 | 0.002 | 0.004 – 0.011 | < 0.001 |
| Albumin | 0.118 | 0.032 | 0.054 – 0.182 | < 0.001 |
| Total dietary fiber | -0.004 | 0.001 | -0.007 – -0.001 | 0.004 |

HDL-cholesterol: High-density lipoprotein cholesterol, CI: Confidence Interval.