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| **Supplemental Table 1. Change in anthropometric variables and cardiometabolic risk factors among TG responders to both DHA and EPA supplementation** |
|   | **DHA vs. control****N=32** | **P-value vs. control ‡,§** | **EPA vs. controlN=32** | **P-value vs.****control ‡,§** | **P-value DHA vs. EPA ‡,¶** |
| Body mass index, kg/m2 | -0.27 | (0.11) | 0.49 | -0.20 | (0.13) | 0.80 | 0.67 |
| Waist circumference, cm | -0.94 | (0.70) | 0.60 | -0.59 | (0.83) | 0.92 | 0.59 |
| Systolic blood pressure, mmHg | -2.89 | (1.53) | 0.36 | -2.95 | (1.62) | 0.34 | 0.96 |
| Diastolic blood pressure, mmHg | -4.19 | (1.08) | 0.02 | -2.59 | (0.99) | 0.20 | 0.13 |
| Total cholesterol, mmol/L | -0.11 | (0.08) | 0.35 | -0.20 | (0.09) | 0.08 | 0.35 |
| LDL-C, mmol/L | +0.06 | (0.07) | 0.84 | 0.08 | (0.08) | 0.64 | 0.72 |
| Total apolipoprotein B100, g/L | -0.06 | (0.03) | 0.24 | -0.06 | (0.03) | 0.35 | 0.78 |
| HDL-C, mmol/L | +0.14 | (0.02) | <0.001 | -0.01 | (0.03) | 0.89 | <0.001 |
| Non-HDL-C, mmol/L | -0.11 | (0.09) | 0.02 | +0.09 | (0.09) | 0.07 | 0.54 |
| Triglycerides, mmol/L \* | -0.67 | (0.06) | <0.001 | -0.61 | (0.06) | <0.001 | 0.22 |
| Mean LDL size, Å | +0.01 | (0.37) | 0.37 | -0.44 | (0.33) | 0.05 | 0.21 |
| LDL peak size, Å | +0.53 | (0.42) | 0.50 | -0.17 | (0.34) | 0.34 | 0.07 |
| % small LDL | +2.20 | (2.55) | 0.16 | +2.88 | (2.29) | 0.11 | 0.77 |
| % large LDL \* | -1.63 | (1.03) | 0.002 | -1.12 | (1.02) | 0.06 | 0.08 |
| PCSK9, ng/mL | -37.31 | (10.15) | <0.001 | -39.14 | (8.73) | <0.001 | 0.83 |
| C-reactive protein, mg/L \*,† | 0.00 | (0.20) | 0.44 | +0.30 | (0.32) | 0.81 | 0.37 |
| Adiponectin, mg/L  | +0.11 | (0.28) | 0.91 | +0.01 | (0.24) | 0.67 | 0.63 |
| Interleukin-6, pg/mL\* | -0.25 | (0.18) | 0.16 | -0.31 | (0.19) | 0.08 | 0.54 |
| Interleukin-18, pg/mL\* | -36.79 | (9.83) | <0.001 | -10.60 | (10.56) | 0.04 | 0.02 |
| TNF-α, pg/mL\* | -0.04 | (0.13) | 0.77 | -0.15 | (0.07) | 0.32 | 0.19 |
| Glucose, mmol/L \* | +0.05 | (0.04) | 0.39 | +0.02 | (0.05) | 0.76 | 0.54 |
| Insulin, pmol/L \* | -10.06 | (6.51) | 0.07 | -4.63 | (5.89) | 0.58 | 0.29 |

**Supplemental material**

Values are expressed as unadjusted means (SEM).

DHA: docosahexaenoic acid; DPA: docosapentaenoic acid; EPA: eicosapentaenoic acid; N3: long-chain omega-3 fatty acids; PCSK9: proprotein convertase subtilisin/kexin type 9; TNF-α: tumor necrosis factor alpha.

\* Analyses were performed on log-tranformed values due to the skewness of the distribution.

† n = 28 for DHA and 29 for EPA due to exclusions for CRP > 10 mg/L.

‡ P-values were obtained with generalized linear models for repeated measurements for continuous values or Fisher's exact tests for proportions. Models were adjusted for age, sex and waist circumference at screening and value of the variable of interest after the control phase.

§ P-values for EPA and DHA changes compared with control values in the outcome were determined with the LSMEANS statement and were tested against the null hypothesis.

¶ Main treatment P-values for the comparison between EPA and DHA changes compared with control values in the outcome were determined by the main treatment effect.

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| **Supplemental Table 2. Gene expression of lipid metabolism after DHA and EPA, vs. control (N=44)** |
| **Gene** | **Control** | **DHA** | **% vs. control** | **P-value vs. control \*,†** | **EPA** | **% vs. control** | **P-value vs. control \*,†** | **P-value DHA vs. EPA\*,‡** |
|  |  |  |  |  |  |  |  |  |  |  |  |
| *HMG CoA reductase* | 1884 | (396) | 1971 | (449) | +5% | 0.25 | 1911 | (498) | +1% | 0.72 | 0.46 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| *LDL receptor*  | 387 | (146) | 367 | (95) | -5% | 0.27 | 374 | (104) | -3% | 0.45 | 0.68 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| *SREBP1c* | 1995 | (518) | 2015 | (478) | +1% | 0.83 | 2003 | (473) | 0% | 0.96 | 0.83 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| *SREBP2* | 2485 | (661) | 2456 | (526) | -1% | 0.72 | 2436 | (415) | -2% | 0.57 | 0.80 |
|  |  |  |  |  |  |  |  |  |  |  |  |

Values are expressed as unadjusted means (SD). For each gene, expression is presented as no. of copies of mRNA normalized for the expression of the housekeeping gene glyceraldehyde 3-phosphate dehydrogenase (GADPH).

HMG-CoA reductase: 3-hydroxy-3-methyl-glutaryl-coenzyme A reductase; LDL: low-density lipoprotein; SREBP: sterol regulatory element-binding protein.

\* P-values were obtained with generalized linear models for repeated measurements for continuous values or Fisher's exact tests for proportions. Models were adjusted for age, sex and waist circumference at screening.

† P-values for DHA and EPA changes compared with control values in the outcome were determined with the LSMEANS statement and were tested against the null hypothesis.

‡ Main treatment P-values for the comparison between DHA and EPA changes compared with control values in the outcome were determined by the main treatment effect.