**Plasma Trans-Fatty Acid Concentrations Continued to be Associated With Serum Lipid and Lipoprotein Concentrations Among U.S. Adults After Reductions in Trans-Fatty Acid Intake**

**ONLINE SUPPORTING MATERIAL**

**Supplemental Methods**

*Measurements of plasma trans-fatty acids*

Four TFA concentrations (trans-9-hexadecenoic acid (HDT) (palmitelaidic acid, C16:1n-7t), trans-9-octadecenoic acid (OD9) (elaidic acid, C18:1n-9t), 1trans-11-octadecenoic acid (OD1) (vaccenic acid, C18:1n-7t-), trans-9, trans-12-octadecadienoic acid (OTT) (linolelaidic acid, C18:2n-6t, 9t)) were analyzed in plasma using gas chromatography coupled with mass spectrometry. In brief, 100 µL plasma with 100 µL of internal standard (IS) solution containing stable isotope-labeled TFA (10 µM of HDT, 30 µM of OD1, 30 µM of OD9, 2.0 µM of OTT) were successively hydrolyzed with 2 mL of 10% (v/v) 6N HCl in acetonitrile and 2 mL of 10% (v/v) 10N NaOH in methanol at 104oC for 45 min. Free fatty acids were extracted from the hydrolysis solution with hexane. The hexanes extract was evaporated to dryness under vacuum and derivatized as described by Lagerstedt et al.([61](#_ENREF_61)) The derivatized fatty acids were analyzed by gas chromatography coupled with mass spectrometry (GC/MSD, Agilent Technologies, Santa Clara, CA). The mass spectrometer was operated in negative chemical ionization (NCI) mode (reagent gas: methane). Chromatographic separation was carried out with an Agilent Select FAME column (200 m x 250 µm x 0.25 µm) and with hydrogen as the carrier gas at 3 ml/min. A sample volume of 1 µL was injected (injector spilt mode: 20:1 split ratio). The fatty acids were separated using a temperature program starting at 130oC and ending at 260oC. The within-day and among-day precision expressed as percent coefficient of variation (% CV) determined with three concentration of plasma pools ranged from 2%-9% CV and 8%-9% CV for HDT, 3%-8% CV and 7%-9% CV for OD1, 1%-7% CV, and 6%-10% CV for OD9, and 2%-11% CV and 9%-15% CV for OTT, respectively. The limits of detection determined using Taylor’s method were 0.07 µM for HDT, 0.43 µM for OD1, 0.29 µM for OD9, and 0.02 µM for OTT, respectively.([62](#_ENREF_62)) Compared with two commercial standards, the average accuracy for all 4 TFAs was 102% (95% CI: 97%-107%).

**Online Supporting Material**

**Supplemental Table 1** Adjusted Beta-Coefficients of Log-Transformed Plasma TFA Concentration Associated With Lipid and Lipoprotein Concentrations Among Adult Participants Aged ≥20 Years—NHANES 1999-2000 and 2009-20101

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | NHANES 1999-2000 | | NHANES 2009-2010 | |  |
| Lipid profiles | Beta-coefficients (95% CI) | *P* | Beta-coefficients (95% CI) | *P* | *P*-interaction2 |
| TC (mg/dL) |  |  |  |  |  |
| M13 | 24.4 (19.0, 29.2) | <0.001 | 29.8 (22.3, 37.3) | <0.001 | 0.42 |
| M24 | 26.7 (21.6, 31.9) | <0.001 | 32.6 (26.4, 38.9) | <0.001 | 0.60 |
| M35 | 27.1 (21.9, 32.3) | <0.001 | 32.2 (25.5, 38.8) | <0.001 | 0.72 |
| LDL-C (mg/dL) |  |  |  |  |  |
| M13 | 14.9 (10.4, 19.4) | <0.001 | 21.3 (15.0, 27.6) | <0.001 | 0.16 |
| M24 | 14.7 (10.1, 19.4) | <0.001 | 20.1 (15.3, 24.9) | <0.001 | 0.29 |
| M35 | 14.9 (10.1, 19.8) | <0.001 | 19.7 (14.7, 24.8) | <0.001 | 0.36 |
| HDL-C (mg/dL) |  |  |  |  |  |
| M13 | -9.6 (-11.5, -7.8) | <0.001 | -11.0 (-12.0, -10.1) | <0.001 | 0.94 |
| M24 | -6.7 (-8.9, -4.6) | <0.001 | -7.0 (-8.1, -5.8) | <0.001 | 0.67 |
| M35 | -6.7 (-8.7, -4.8) | <0.001 | -6.9 (-8.2, -5.7) | <0.001 | 0.44 |
| TG (mg/dL)6 |  |  |  |  |  |
| M13 | 0.68 (0.59, 0.77) | <0.001 | 0.70 (0.65, 0.74) | <0.001 | 0.31 |
| M24 | 0.66 (0.59, 0.74) | <0.001 | 0.68 (0.63, 0.72) | <0.001 | 0.67 |
| M35 | 0.67 (0.60, 0.75) | <0.001 | 0.67 (0.63, 0.71) | <0.001 | 0.44 |
| TC/HDL-C ratio |  |  |  |  |  |
| M13 | 1.48 (1.23, 1.72) | <0.001 | 1.66 (1.46, 1.85) | <0.001 | 0.39 |
| M24 | 1.27 (1.01, 1.54) | <0.001 | 1.46 (1.22, 1.69) | <0.001 | 0.44 |
| M35 | 24.4 (19.0, 29.2) | <0.001 | 29.8 (22.3, 37.3) | <0.001 | 0.43 |

1. Values are adjusted beta-coefficients (95% CIs). HDL-C, high-density lipoprotein cholesterol; LDL-C, low-density lipoprotein cholesterol; NHANES, National Health and Nutrition Examination Survey; TC, total cholesterol; TC/HDL-C ratios, total cholesterol and high-density lipoprotein cholesterol ratio; TFA , trans-fatty acid; TG, triclyceride.
2. We pooled NHANES 1999-2000 and 2009-2010 as one dataset, and tested interaction of NHANES cycle (dichotomous variable) with plasma TFA on lipid profiles in the multivariable linear regression models. All tests were 2-tailed and based on Wald F-test.
3. M1 = adjusted for age, sex, race/ethnicity, and total calorie intake.
4. M2 = in addition to M1, adjusted for educational attainment, smoking status, alcohol consumption, physical activity level, statins use, diabetes status, Healthy Eating Index-2010, and body mass index.
5. M3 = in addition to M2, adjusted for total polyunsaturated fatty acids, total saturated fat, total dietary TFA, and total cholesterol intake.
6. Triglyceride concentration was log transformed.

**Online Supporting Material**

**Supplemental Table 2** Adjusted Mean Lipid and Lipoprotein Concentrations Among Adult Participants Aged ≥20 Years by Quintiles of Vaccenic Acid (18:1n-7t) Concentration—NHANES 1999-2000 and 2009-20101

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Quintiles of Plasma Vaccenic Acid (18:1n-7t) Concentration (µmol/L) | | | | |  |
|  | Q1 | Q2 | Q3 | Q4 | Q5 | *P*-trend2 |
| NHANES 1999-2000 |  |  |  |  |  |  |
| Plasma Vaccenic Acid, µmol/L | 21.1 [4.5 - 26.0 ] | 30.5 [26.1 - 34.1 ] | 38.1 [34.2 - 42.0 ] | 46.6 [42.1 - 53.4 ] | 64.1 [53.5 - 313.0 ] |  |
| Number of participants | 303 | 286 | 266 | 245 | 283 |  |
| TC (mg/dL) |  |  |  |  |  |  |
| M13 | 192.4 (186.2, 198.6) | 199.6 (193.7, 205.5) | 198.4 (194.6, 202.2) | 206.9 (200.1, 213.6) | 219.4 (212.0, 226.7) | <0.001 |
| M24 | 190.9 (185.0, 196.8) | 198.4 (192.4, 204.4) | 199.3 (195.0, 203.6) | 207.9 (202.2, 213.6) | 220.1 (211.9, 228.3) | <0.001 |
| M35 | 190.8 (184.8, 196.9) | 198.2 (192.2, 204.1) | 199.3 (195.1, 203.4) | 208.3 (202.5, 214.1) | 220.0 (212.2, 227.8) | <0.001 |
| LDL-C (mg/dL) |  |  |  |  |  |  |
| Number of participants with LDL-C measure | 301 | 286 | 265 | 242 | 256 |  |
| M13 | 118.0 (112.7, 123.4) | 124.5 (119.4, 129.7) | 124.5 (121.2, 127.9) | 130.0 (123.9, 136.1) | 135.6 (129.6, 141.6) | <0.001 |
| M24 | 118.3 (112.9, 123.6) | 124.2 (119.1, 129.4) | 124.8 (121.0, 128.6) | 130.7 (125.4, 135.9) | 134.9 (128.6, 141.2) | <0.001 |
| M35 | 118.2 (112.5, 123.9) | 124.1 (118.9, 129.3) | 123.8 (118.1, 128.5) | 131.0 (124.6, 137.4) | 134.8 (128.8, 140.8) | <0.001 |
| HDL-C (mg/dL) |  |  |  |  |  |  |
| M13 | 54.3 (51.9, 56.6) | 52.5 (50.2, 54.8) | 49.7 (48.0, 51.4) | 47.3 (46.0, 48.9) | 43.1 (41.4, 44.7) | <0.001 |
| M24 | 52.5 (50.1, 55.0) | 51.8 (49.4, 54.1) | 49.5 (47.8, 51.2) | 48.4 (47.0, 49.8) | 44.8 (42.9, 46.6) | <0.001 |
| M35 | 52.6 (50.4, 54.9) | 51.7 (49.3, 54.1) | 49.6 (48.0, 51.3) | 48.4 (47.0, 49.9) | 44.6 (42.8, 46.4) | <0.001 |
| TG6 (mg/dL) |  |  |  |  |  |  |
| M13 | 91.8 (88.1, 95.6) | 101.4 (96.9, 106.1) | 110.5 (107.2, 113.8) | 131.7 (125.1, 138.7) | 188.1 (169.9, 208.2) | <0.001 |
| M24 | 92.1 (87.5, 97.0) | 101.8 (97.4, 106.4) | 113.4 (108.0, 119.1) | 129.9 (123.4, 136.8) | 185.7 (170.7, 202.0) | <0.001 |
| M35 | 91.8 (87.5, 96.2) | 101.2 (96.4, 106.2) | 122.9 (107.8, 118.3) | 130.5 (124.2, 137.2) | 186.7 (172.8, 202.9) | <0.001 |
| TC/HDL-C ratio |  |  |  |  |  |  |
| M13 | 3.76 (3.60, 3.91) | 4.06 (3.87, 4.25) | 4.26 (4.14, 4.38) | 4.63 (4.43, 4.82) | 5.44 (5.21, 5.68) | <0.001 |
| M24 | 3.88 (3.70, 4.06) | 4.09 (3.90, 4.29) | 4.30 (4.17, 4.43) | 4.57 (4.42, 4.71) | 5.31 (5.10, 5.52) | <0.001 |
| M35 | 3.87 (3.69, 4.04) | 4.09 (3.89, 4.29) | 4.29 (4.16, 4.43) | 4.57 (4.44, 4.70) | 5.32 (5.11, 5.53) | <0.001 |
| NHANES 2009-2010 | Q1 | Q2 | Q3 | Q4 | Q5 | *P-* trend2 |
| Median (Range) | 9.5 (2.9, 12.1) | 14.3 (12.2, 16.0) | 17.8 (16.1, 20.0) | 23.0 (20.1, 26.5) | 33.5 (26.6, 161.0) |  |
| Number of participants | 402 | 443 | 416 | 442 | 452 |  |
| TC (mg/dL) |  |  |  |  |  |  |
| M13 | 177.6 (172.1, 183.1) | 189.1 (184.6, 193.6) | 195.7 (191.7, 199.7) | 204.1 (197.9, 210.3) | 212.8 (206.8, 218.7) | <0.001 |
| M24 | 177.2 (172.4, 182.0) | 188.3 (184.7, 191.8) | 195.5 (192.3, 198.6) | 204.6 (199.0, 209.3) | 213.7 (208.8, 218.6) | <0.001 |
| M35 | 178.0 (172.4, 183.7) | 188.2 (184.7, 191.8) | 195.1 (191.8, 198.5) | 204.5 (199.9, 209.1) | 213.4 (208.2, 218.5) | <0.001 |
| LDL-C (mg/dL) |  |  |  |  |  |  |
| Number of participants with LDL-C measure | 401 | 442 | 415 | 441 | 421 |  |
| M13 | 101.74 (97.1, 106.2) | 110.7 (107.3, 114.2) | 118.5 (114.3, 122.7) | 125.6 (120.4, 130.9) | 126.9 (121.6, 132.2) | <0.001 |
| M24 | 103.2 (99.2, 107.3) | 111.0 (108.1, 113.9) | 118.0 (114.9, 123.1) | 124.9 (120.9, 128.9) | 126.2 (121.9, 130.5) | <0.001 |
| M35 | 104.1 (99.3, 108.8) | 110.9 (108.1, 113.8) | 117.6 (114.2, 121.1) | 124.8 (120.9, 128.7) | 125.9 (121.4, 130.5) | <0.001 |
| HDL-C (mg/dL) |  |  |  |  |  |  |
| M13 | 59.0 (57.6, 60.4) | 58.2 (56.3, 60.0) | 54.3 (52.8, 55.9) | 51.4 (49.6, 53.1) | 46.8 (45.2, 48.4) | <0.001 |
| M24 | 56.4 (54.7, 58.2) | 56.8 (55.6, 58.0) | 54.5 (52.7, 56.3) | 52.9 (51.5, 54.4) | 48.9 (47.4, 50.4) | <0.001 |
| M35 | 56.7 (54.9, 58.4) | 56.7 (55.6, 57.9) | 54.4 (52.8, 55.9) | 52.9 (51.6, 54.2) | 48.9 (47.3, 50.4) | <0.001 |
| TG6 (mg/dL) |  |  |  |  |  |  |
| M13 | 78.3 (73.8, 83.1) | 89.6 (85.4, 94.0) | 103.9 (99.4, 108.5) | 124.8 (118.8, 131.1) | 167.4 (159.0, 176.3) | <0.001 |
| M24 | 80.0 (75.2, 85.1) | 90.3 (86.0, 94.8) | 104.0 (98.7, 109.6) | 123.1 (118.4, 128.1) | 164.7 (157.7, 172.0) | <0.001 |
| M35 | 79.1 (74.5, 84.1) | 90.7 (86.2, 95.5) | 104.8 (100.4, 109.4) | 123.3 (118.6, 128.3) | 164.1 (157.7, 170.7) | <0.001 |
| TC/HDL-C ratio |  |  |  |  |  |  |
| M13 | 3.18 (3.06, 3.31) | 3.47 (3.36, 3.57) | 3.83 (3.69, 3.97) | 4.23 (4.11, 4.34) | 4.97 (4.82, 5.13) | <0.001 |
| M24 | 3.36 (3.17, 3.54) | 3.54 (3.44, 3.64) | 3.81 (3.67, 3.96) | 4.12 (4.01, 4.23) | 4.87 (4.70, 5.00) | <0.001 |
| M35 | 3.36 (3.15, 3.57) | 3.55 (3.44, 3.65) | 3.82 (3.69, 3.95) | 4.12 (4.01, 4.23) | 4.84 (4.69, 4.99) | <0.001 |

1. Values are medians [ranges] for plasma Plasma Vaccenic Acid concentration or adjusted means (95% CIs). HDL-C, high-density lipoprotein cholesterol; LDL-C, low-density lipoprotein cholesterol; NHANES, National Health and Nutrition Examination Survey; Q, quintile; TC, total cholesterol; TC/HDL-C ratios, total cholesterol and high-density lipoprotein cholesterol ratio; TFA, trans-fatty acid; TG, triclyceride.
2. P-values are presented for the linear difference across the quintiles of plasma TFA concentration. All tests were 2-tailed and based on Wald F-test.
3. Model 1 = adjusted for age, sex, race/ethnicity and total calorie intake.
4. Model 2 = in addition to Model 1, adjusted for educational attainment, smoking status, alcohol consumption, physical activity level, statins use, diabetes status, Healthy Eating Index-2010, and body mass index.
5. Model 3 = in addition to Model 2, adjusted for total polyunsaturated fatty acids, total saturated fat, total dietary TFA, and total cholesterol intake.
6. TG concentration were log transformed and presented as geometric means.

**Online Supporting Material**

**Supplemental Table 3** Adjusted Mean Lipid and Lipoprotein Concentrations Among Adult Participants Aged ≥20 Years by Quintiles of Elaidic Acid (18:1n-9t) Concentration—NHANES 1999-2000 and 2009-20101

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Quintiles of Plasma Elaidic Acid (18:1n-9t) Concentration (µmol/L) | | | | |  |
|  | Q1 | Q2 | Q3 | Q4 | Q5 | *P*-trend2 |
| NHANES 1999-2000 |  |  |  |  |  |  |
| Plasma Elaidic Acid, µmol/L | 18.0 [4.5 - 21.7 ] | 25.4 [21.8 - 28.3 ] | 32.3 [28.4 - 36.9 ] | 41.5 [37.0 - 48.3 ] | 59.8 [48.4 - 238.0 ] |  |
| Number of participants | 290 | 266 | 287 | 258 | 282 |  |
| TC (mg/dL) |  |  |  |  |  |  |
| M13 | 188.9 (183.4, 194.4) | 202.6 (196.7, 208.4) | 201.3 (195.2, 207.4) | 203.9 (198.8, 209.0) | 219.9 (215.1, 224.8) | <0.001 |
| M24 | 187.9 (182.4, 193.5) | 202.0 (195.7, 208.3) | 201.2 (195.6, 206.8) | 205.6 (201.1, 210.1) | 219.9 (214.8, 225.0) | <0.001 |
| M35 | 187.8 (182.1, 193.6) | 201.7 (195.5, 208.0) | 201.2 (195.9, 206.6) | 205.9 (201.1, 210.7) | 219.9 (214.6, 225.2) | <0.001 |
| LDL-C (mg/dL) |  |  |  |  |  |  |
| Number of participants with LDL-C measure | 290 | 265 | 286 | 257 | 252 |  |
| M13 | 115.2 (110.4, 120.0) | 128.3 (123.2, 133.3) | 126.9 (121.1, 132.7) | 128.2 (123.9, 132.6) | 133.9 (129.4, 138.5) | <0.001 |
| M24 | 115.9 (110.8, 121.0) | 128.0 (122.4, 133.7) | 127.0 (121.7, 132.2) | 128.8 (125.0, 132.6) | 132.8 (128.7, 137.0) | <0.001 |
| M35 | 115.8 (110.4, 121.2) | 127.8 (122.1, 133.6) | 127.0 (121.9, 132.2) | 129.0 (125.0, 133.0) | 132.8 (128.7, 136.9) | <0.001 |
| HDL-C (mg/dL) |  |  |  |  |  |  |
| M13 | 56.3 (53.8, 58.8) | 51.9 (50.7, 53.1) | 50.1 (48.2, 52.0) | 46.3 (44.3, 48.3) | 42.4 (41.0, 43.7) | <0.001 |
| M24 | 54.4 (51.8, 56.9) | 51.1 (49.8, 52.4) | 49.5 (48.2, 50.9) | 47.8 (46.3, 49.3) | 44.2 (42.9, 45.5) | <0.001 |
| M35 | 54.3 (51.8, 56.9) | 51.1 (49.7, 52.5) | 49.5 (48.1, 50.9) | 47.8 (46.4, 49.3) | 44.2 (43.0, 45.4) | <0.001 |
| TG6 (mg/dL) |  |  |  |  |  |  |
| M13 | 80.9 (76.6, 85.4) | 100.9 (96.1, 105.9) | 112.0 (105.2, 119.2) | 137.8 (126.8, 149.6) | 203.9 (186.1, 223.4) | <0.001 |
| M24 | 81.8 (78.0, 85.9) | 102.8 (97.7, 108.2) | 112.8 (106.9, 119.1) | 135.2 (126.2, 146.3) | 199.0 (183.9, 215.3) | <0.001 |
| M35 | 81.8 (77.0, 86.1) | 102.4 (97.2, 107.9) | 113.0 (107.0, 119.3) | 136.3 (126.3, 147.1) | 202.2 (185.9, 219.9) | <0.001 |
| TC/HDL-C ratio |  |  |  |  |  |  |
| M13 | 3.56 (3.44, 3.68) | 4.15 (4.04, 4.25) | 4.29 (4.08, 4.50) | 4.62 (4.45, 4.80) | 5.53 (5.35, 5.72) | <0.001 |
| M24 | 3.71 (3.60, 3.83) | 4.20 (4.05, 4.36) | 4.34 (4.19, 4.50) | 4.53 (4.40, 4.66) | 5.36 (5.19, 5.54) | <0.001 |
| M35 | 3.71 (3.60, 3.82) | 4.20 (4.04, 4.36) | 4.35 (4.19, 4.50) | 4.53 (4.41, 4.66) | 5.36 (5.18, 5.54) | <0.001 |
| NHANES 2009-2010 | Q1 | Q2 | Q3 | Q4 | Q5 | *P-* trend2 |
| Median (Range) | 6.9 (2.7, 8.5) | 10.1 (8.6, 11.4) | 13.0 (11.5, 15.0) | 17.2 (15.1, 20.5) | 26.8 (20.6, 127.0) |  |
| Number of participants | 385 | 405 | 435 | 452 | 478 |  |
| TC (mg/dL) |  |  |  |  |  |  |
| M13 | 180.0 (172.1, 187.8) | 187.4 (182.3, 192.5) | 197.1 (192.3, 201.8) | 202.1 (197.5, 206.6) | 213.3 (206.8, 219.8) | <0.001 |
| M24 | 178.8 (171.3, 186.3) | 186.0 (181.5, 190.6) | 196.7 (192.5, 200.9) | 202.4 (198.0, 206.9) | 215.8 (210.8, 220.8) | <0.001 |
| M35 | 179.0 (171.5, 186.5) | 185.7 (181.3, 190.1) | 196.1 (192.1, 200.0) | 202.9 (198.6, 207.1) | 216.2 (211.3, 221.1) | <0.001 |
| LDL-C (mg/dL) |  |  |  |  |  |  |
| Number of participants with LDL-C measure | 385 | 405 | 435 | 449 | 446 |  |
| M13 | 103.9 (97.0, 110.8) | 111.1 (106.4, 115.7) | 120.3 (116.3, 124.2) | 120.6 (117.3, 123.9) | 128.1 (122.0, 134.2) | <0.001 |
| M24 | 105.4 (99.0, 111.9) | 110.9 (106.4, 115.4) | 119.4 (115.5, 123.2) | 120.0 (116.7, 123.3) | 128.2 (124.1, 132.3) | <0.001 |
| M35 | 105.4 (99.0, 111.9) | 110.6 (106.2, 115.1) | 118.9 (114.9, 122.8) | 120.4 (117.2, 123.6) | 128.6 (124.4, 132.8) | <0.001 |
| HDL-C (mg/dL) |  |  |  |  |  |  |
| M13 | 61.4 (59.8, 63.0) | 56.4 (54.5, 58.3) | 54.7 (52.8, 56.6) | 52.2 (50.8, 53.6) | 44.7 (43.4, 45.9) | <0.001 |
| M24 | 58.0 (56.5, 59.4) | 55.2 (53.3, 57.1) | 55.0 (53.4, 56.6) | 53.7 (52.5, 55.0) | 47.5 (46.0, 49.1) | <0.001 |
| M35 | 57.8 (56.3, 59.3) | 55.1 (53.3, 57.0) | 54.9 (53.4, 56.4) | 53.9 (52.6, 55.1) | 47.7 (46.0, 49.3) | <0.001 |
| TG6 (mg/dL) |  |  |  |  |  |  |
| M13 | 69.9 (67.2, 72.6) | 93.1 (88.5, 97.9) | 101.8 (98.6, 105.0) | 131.0 (123.9, 138.6) | 177.7 (169.2, 186.7) | <0.001 |
| M24 | 71.8 (68.6, 75.1) | 92.9 (87.6, 98.4) | 102.7 (99.7, 105.8) | 128.9 (122.0, 135.9) | 174.4 (166.4, 182.8) | <0.001 |
| M35 | 72.9 (69.6, 76.3) | 93.1 (88.4, 98.1) | 102.6 (99.7, 105.5) | 127.8 (121.5, 134.5) | 173.1 (165.4, 181.2) | <0.001 |
| TC/HDL-C ratio |  |  |  |  |  |  |
| M13 | 3.05 (2.92, 3.18) | 3.49 (3.35, 3.63) | 3.86 (3.76, 3.97) | 4.15 (4.01, 4.29) | 5.15 (4.97, 5.33) | <0.001 |
| M24 | 3.26 (3.09, 3.43) | 3.54 (3.36, 3.71) | 3.84 (3.73, 3.94) | 4.06 (3.94, 4.18) | 5.00 (4.81, 5.20) | <0.001 |
| M35 | 3.28 (3.11, 3.45) | 3.53 (3.36, 3.69) | 3.82 (3.72, 3.93) | 4.05 (3.93, 4.18) | 5.00 (4.81, 5.19) | <0.001 |

1. Values are medians [ranges] for plasma Plasma Elaidic Acid concentration or adjusted means (95% CIs). HDL-C, high-density lipoprotein cholesterol; LDL-C, low-density lipoprotein cholesterol; NHANES, National Health and Nutrition Examination Survey; Q, quintile; TC, total cholesterol; TC/HDL-C ratios, total cholesterol and high-density lipoprotein cholesterol ratio; TFA, trans-fatty acid; TG, triclyceride.
2. P-values are presented for the linear difference across the quintiles of plasma TFA concentration. All tests were 2-tailed and based on Wald F-test.
3. Model 1 = adjusted for age, sex, race/ethnicity and total calorie intake.
4. Model 2 = in addition to Model 1, adjusted for educational attainment, smoking status, alcohol consumption, physical activity level, statins use, diabetes status, Healthy Eating Index-2010, and body mass index.
5. Model 3 = in addition to Model 2, adjusted for total polyunsaturated fatty acids, total saturated fat, total dietary TFA, and total cholesterol intake.
6. TG concentration were log transformed and presented as geometric means.

**Online Supporting Material**

**Supplemental Table 4** Adjusted Mean Lipid and Lipoprotein Concentrations Among Adult Participants Aged ≥20 Years by Quintiles of Palmitelaidic Acid (16:1n-7t) Concentration—NHANES 1999-2000 and 2009-20101

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Quintiles of Plasma Palmitelaidic Acid (16:1n-7t) Concentration (µmol/L) | | | | |  |
|  | Q1 | Q2 | Q3 | Q4 | Q5 | *P*-trend2 |
| NHANES 1999-2000 |  |  |  |  |  |  |
| Plasma Palmitelaidic Acid, µmol/L | 3.9 [1.1 - 4.7 | 5.5 [4.8 - 6.0 ] | 6.7 [6.1 - 7.4 ] | 8.4 [7.5 - 9.6 ] | 11.7 [9.7 - 33.1 ] |  |
| Number of participants | 307 | 272 | 259 | 260 | 285 |  |
| TC (mg/dL) | done |  |  |  |  |  |
| M13 | 187.6 (181.2, 194.1) | 200.3 (195.6, 205.1) | 205.6 (200.5, 210.6) | 200.9 (195.1, 206.7) | 222.4 (215.1, 229.7) | <0.001 |
| M24 | 184.6 (180.0, 189.1) | 199.5 (194.6, 204.4) | 205.2 (200.8, 209.6) | 203.0 (196.6, 209.5) | 224.6 (217.8, 231.3) | <0.001 |
| M35 | 184.4 (179.4, 189.5) | 199.7 (194.8, 204.6) | 204.9 (200.8, 209.1) | 203.1 (196.7, 209.6) | 224.7 (218.0, 231.4) | <0.001 |
| LDL-C (mg/dL) |  |  |  |  |  |  |
| Number of participants with LDL-C measure | 307 | 272 | 257 | 259 | 255 |  |
| M13 | 112.5 (107.3, 117.6) | 126.5 (120.9, 132.0) | 129.3 (124.5, 134.1) | 125.7 (119.9, 131.6) | 139.2 (132.6, 145.8) | <0.001 |
| M24 | 111.9 (107.3, 116.4) | 125.7 (120.5, 130.8) | 129.0 (124.2, 133.8) | 126.7 (120.5, 132.9) | 140.0 (134.0, 146.0) | <0.001 |
| M35 | 111.8 (106.8, 116.8) | 125.8 (120.5, 131.0) | 128.8 (124.1, 133.5) | 126.8 (120.5, 133.1) | 140.1 (134.3, 15.9) | <0.001 |
| HDL-C (mg/dL) |  |  |  |  |  |  |
| M13 | 56.3 (54.0, 58.6) | 51.3 (49.1, 53.5) | 50.3 (48.2, 52.3) | 46.1 (44.5, 47.6) | 43.0 (41.1, 45.0) | <0.001 |
| M24 | 54.4 (52.0, 56.8) | 51.2 (49.4, 53.0) | 50.2 (48.2, 52.2) | 46.7 (45.5, 47.8) | 44.4 (42.5, 46.4) | <0.001 |
| M35 | 54.5 (52.2, 56.7) | 51.3 (49.5, 53.0) | 50.1 (48.1, 52.0) | 46.8 (45.6, 47.9) | 44.3 (42.5, 46.2) | <0.001 |
| TG6 (mg/dL) |  |  |  |  |  |  |
| M13 | 86.3 (82.4, 90.4) | 101.7 (95.6, 108.1) | 117.7 (110.5, 125.2) | 132.7 (126.0, 139.8) | 188.1 (171.5, 206.4) | <0.001 |
| M24 | 84.7 (80.0, 89.6) | 101.9 (96.0, 108.1) | 117.7 (111.8, 123.9) | 135.1 (128.6, 141.9) | 187.7 (173.5, 203.1) | <0.001 |
| M35 | 84.3 (80.1, 88.7) | 101.9 (96.3, 107.9) | 117.8 (111.8, 124.1) | 134.8 (128.9, 140.0) | 189.0 (174.6, 204.5) | <0.001 |
| TC/HDL-C ratio |  |  |  |  |  |  |
| M13 | 3.50 (3.37, 3.63) | 4.20 (3.98, 4.42) | 4.35 (4.19, 4.51) | 4.61 (4.37, 4.84) | 5.51 (5.23, 5.79) | <0.001 |
| M24 | 3.60 (3.46, 3.73) | 4.19 (4.01, 4.36) | 4.33 (4.15, 4.52) | 4.61 (4.44, 4.78) | 5.44 (5.16, 5.71) | <0.001 |
| M35 | 3.58 (3.46, 3.71) | 4.19 (4.02, 4.36) | 4.34 (4.16, 4.52) | 4.61 (4.44, 4.77) | 5.44 (5.17, 5.72) | <0.001 |
| NHANES 2009-2010 | Q1 | Q2 | Q3 | Q4 | Q5 | *P*-trend2 |
| Median (Range) | 2.2 (0.9, 2.6) | 3.1 (2.7, 3.4) | 3.8 (3.5, 4.2) | 4.9 (4.3, 5.4) | 6.7 (5.5, 33.1) |  |
| Number of participants | 415 | 437 | 419 | 444 | 440 |  |
| TC (mg/dL) |  |  |  |  |  |  |
| M13 | 175.0 (169.9, 180.1) | 185.9 (181.1, 190.8) | 194.1 (191.2, 197.0) | 205.7 (201.8, 209.6) | 219.6 (214.0, 225.1) | <0.001 |
| M24 | 173.9 (169.6, 178.1) | 186.3 (182.4, 190.3) | 194.2 (191.3, 197.0) | 205.2 (201.9, 208.5) | 220.7 (216.4, 225.1) | <0.001 |
| M35 | 174.5 (169.8, 179.2) | 186.3 (182.4, 190.2) | 194.1 (191.2, 196.9) | 204.7 (201.2, 208.3) | 220.8 (216.5, 225.0) | <0.001 |
| LDL-C (mg/dL) |  |  |  |  |  |  |
| Number of participants with LDL-C measure | 415 | 436 | 418 | 442 | 409 |  |
| M13 | 98.6 (94.3, 102.9) | 108.8 (105.3, 112.4) | 117.6 (114.5, 120.7) | 126.5 (123.3, 129.6) | 133.2 (127.9, 138.4) | <0.001 |
| M24 | 99.9 (95.9, 103.8) | 109.9 (107.3, 112.4) | 117.3 (114.2, 120.4) | 125.0 (122.3, 127.7) | 132.5 (128.1, 136.9) | <0.001 |
| M35 | 100.4 (95.9, 104.9) | 10.9 (107.3, 112.4) | 117.2 (114.0, 120.4) | 124.5 (121.7, 127.3) | 132.6 (128.3, 136.9) | <0.001 |
| HDL-C (mg/dL) |  |  |  |  |  |  |
| M13 | 60.3 (58.5, 62.2) | 56.9 (55.1, 58.7) | 53.4 (51.9, 54.9) | 51.9 (50.2, 53.6) | 46.8 (45.1, 48.4) | <0.001 |
| M24 | 57.5 (55.8, 59.1) | 56.1 (54.6, 57.6) | 53.7 (52.3, 55.2) | 53.1 (51.1, 55.1) | 49.0 (47.5, 50.5) | <0.001 |
| M35 | 57.6 (55.9, 59.3) | 56.0 (54.6, 57.4) | 53.7 (52.2, 55.2) | 53.0 (51.2, 54.9) | 49.0 (47.4, 50.6) | <0.001 |
| TG6 (mg/dL) |  |  |  |  |  |  |
| M13 | 74.8 (71.4, 78.4) | 89.8 (85.0, 94.9) | 105.3 (101.4, 109.4) | 125.6 (120.5, 130.8) | 174.9 (167.0, 183.2) | <0.001 |
| M24 | 75.9 (72.2, 79.9) | 89.9 (85.5, 94.5) | 105.8 (102.8, 108.8) | 124.9 (120.0, 130.1) | 172.3 (166.1, 178.7) | <0.001 |
| M35 | 76.0 (72.5, 80.0) | 90.1 (86.0, 94.3) | 106.2 (103.4, 108.9) | 124.7 (120.4, 129.2) | 171.5 (165.7, 177.5) | <0.001 |
| TC/HDL-C ratio |  |  |  |  |  |  |
| M13 | 3.03 (2.92, 3.13) | 3.47 (3.36, 3.57) | 3.89 (3.78, 4.00) | 4.21 (4.07, 4.35) | 5.13 (4.95, 5.32) | <0.001 |
| M24 | 3.20 (3.04, 3.37) | 3.53 (3.44, 3.63) | 3.87 (3.77, 3.97) | 4.12 (3.96, 4.27) | 5.00 (4.81, 5.19) | <0.001 |
| M35 | 3.21 (3.04, 3.38) | 3.54 (3.45, 3.63) | 3.87 (3.78, 3.97) | 4.11 (3.97, 4.25) | 4.99 (4.81, 5.18) | <0.001 |

1. Values are medians [ranges] for plasma Plasma Palmitelaidic Acid concentration or adjusted means (95% CIs). HDL-C, high-density lipoprotein cholesterol; LDL-C, low-density lipoprotein cholesterol; NHANES, National Health and Nutrition Examination Survey; Q, quintile; TC, total cholesterol; TC/HDL-C ratios, total cholesterol and high-density lipoprotein cholesterol ratio; TFA , trans-fatty acid; TG, triclyceride.
2. P-values are presented for the linear difference across the quintiles of plasma TFA concentration. All tests were 2-tailed and based on Wald F-test.
3. Model 1 = adjusted for age, sex, race/ethnicity and total calorie intake.
4. Model 2 = in addition to Model 1, adjusted for educational attainment, smoking status, alcohol consumption, physical activity level, statins use, diabetes status, Healthy Eating Index-2010, and body mass index.
5. Model 3 = in addition to Model 2, adjusted for total polyunsaturated fatty acids, total saturated fat, total dietary TFA, and total cholesterol intake.
6. TG concentration were log transformed and presented as geometric means.

**Supplemental Table 5** Adjusted Mean Lipid and Lipoprotein Concentrations Among Adult Participants Aged ≥20 Years by Quintiles of Linoelaidic Acid (18:2n-6t,9t) Concentration—NHANES 1999-2000 and 2009-20101

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Quintiles of Plasma Linoelaidic Acid (18:2n-6t,9t) Concentration (µmol/L) | | | | |  |
|  | Q1 | Q2 | Q3 | Q4 | Q5 | *P*-trend2 |
| NHANES 1999-2000 |  |  |  |  |  |  |
| Plasma Linoelaidic Acid, µmol/L | 1.5 [0.6 - 1.8 ] | 2.2 [1.9 - 2.3 ] | 2.7 [2.4 - 3.0 ] | 3.6 [3.1 - 3.9 ] | 5.1 [4.0 - 13.1 ] |  |
| Number of participants | 303 | 291 | 279 | 251 | 259 |  |
| TC (mg/dL) |  |  |  |  |  |  |
| M13 | 181.0 (174.9, 187.2) | 199.3 (194.3, 204.2) | 202.7 (195.5, 209.9) | 211.4 (207.1, 215.6) | 223.0 (219.7, 226.3) | <0.001 |
| M24 | 180.6 (174.5, 186.7) | 198.3 (193.9, 202.8) | 201.9 (195.1, 208.6) | 211.8 (208.2, 215.4) | 224.7 (221.7, 227.7) | <0.001 |
| M35 | 180.4 (174.1, 186.7) | 198.4 (193.9, 202.8) | 201.8 (195.3, 208.3) | 211.7 (208.2, 215.2) | 225.0 (221.6, 228.5) | <0.001 |
| LDL-C (mg/dL) |  |  |  |  |  |  |
| Number of participants with LDL-C measure | 303 | 291 | 279 | 249 | 228 |  |
| M13 | 112.0 (106.5, 117.4) | 126.6 (121.9, 131.2) | 128.2 (122.9, 133.4) | 131.7 (126.8, 136.6) | 134.8 (131.2, 138.4) | <0.001 |
| M24 | 112.5 (106.6, 118.3) | 126.5 (122.3, 130.8) | 127.6 (122.4, 132.8) | 131.4 (127.0, 135.9) | 135.2 (132.3, 138.1) | <0.001 |
| M35 | 112.4 (106.2, 118.6) | 126.5 (122.1, 130.9) | 127.5 (122.5, 132.6) | 131.4 (127.1, 135.7) | 135.4 (132.6, 138.3) | <0.001 |
| HDL-C (mg/dL) |  |  |  |  |  |  |
| M13 | 53.6 (51.6, 55.6) | 52.7 (51.1, 54.3) | 50.0 (47.5, 52.5) | 46.9 (44.6, 49.2) | 43.7 (42.3, 45.2) | <0.001 |
| M24 | 51.9 (50.3, 53.5) | 51.4 (49.5, 53.4) | 49.5 (47.3, 51.6) | 48.3 (46.2, 50.5) | 45.8 (44.1, 47.4) | <0.001 |
| M35 | 51.7 (50.3, 53.2) | 51.5 (49.6, 53.4) | 49.5 (47.4, 51.6) | 48.3 (46.1, 50.5) | 45.9 (44.3, 47.6) | <0.001 |
| TG6 (mg/dL) |  |  |  |  |  |  |
| M13 | 73.8 (70.4, 77.5) | 94.7 (89.3, 100.5) | 114.4 (107.8, 121.5) | 154.2 (145.0, 164.1) | 210.3 (192.3, 230.0) | <0.001 |
| M24 | 76.1 (72.9, 79.4) | 96.0 (90.1, 102.2) | 115.0 (108.7, 121.7) | 150.4 (140.8, 160.7) | 205.4 (189.3, 222.9) | <0.001 |
| M35 | 76.1 (73.1, 79.2) | 96.0 (90.3, 102.1) | 115.2 (108.8, 121.9) | 150.3 (140.7, 160.5) | 205.3 (188.4, 223.7) | <0.001 |
| TC/HDL-C ratio |  |  |  |  |  |  |
| M13 | 3.58 (3.43, 3.72) | 4.04 (3.91, 4.17) | 4.31 (4.16, 4.45) | 4.80 (4.59, 5.02) | 5.45 (5.30, 5.59) | <0.001 |
| M24 | 3.73 (3.58, 3.88) | 4.12 (3.97, 4.27) | 4.33 (4.20, 4.47) | 4.68 (4.48, 4.89) | 5.30 (5.14, 5.47) | <0.001 |
| M35 | 3.73 (3.59, 3.87) | 4. 12 (3.97, 4.27) | 4.34 (4.20, 4.47) | 4.68 (4.48, 4.89) | 5.30 (5.14, 5.47) | <0.001 |
| NHANES 2009-2010 | Q1 | Q2 | Q3 | Q4 | Q5 | *P*-trend2 |
| Median (Range) | 0.9 (0.4, 1.0) | 1.2 (1.1, 1.3) | 1.5 (1.4, 1.6) | 2.0 (1.8, 2.2) | 2.8 (2.3, 15.1) |  |
| Number of participants | 416 | 421 | 434 | 435 | 449 |  |
| TC (mg/dL) |  |  |  |  |  |  |
| M13 | 170.9 (165.0, 176.8) | 186.1 (180.9, 191.3) | 195.6 (191.4, 199.8) | 205.9 (203.1, 208.7) | 221.6 (216.5, 226.6) | <0.001 |
| M24 | 170.7 (165.8, 175.5) | 186.6 (181.5, 191.7) | 194.0 (190.5, 197.6) | 205.6 (202.5, 208.7) | 223.1 (218.6, 227.5) | <0.001 |
| M35 | 170.4 (165.6, 175.2) | 186.2 (181.1, 191.3) | 193.8 (190.3, 197.3) | 205.9 (202.6, 209.2) | 223.7 (218.7, 228.7) | <0.001 |
| LDL-C (mg/dL) |  |  |  |  |  |  |
| Number of participants with LDL-C measure | 416 | 421 | 434 | 434 | 415 |  |
| M13 | 98.4 (92.6, 104.2) | 112.5 (108.2, 116.9) | 117.8 (114.3, 121.3) | 125.3 (122.3, 128.4) | 130.3 (125.2, 135.5) | <0.001 |
| M24 | 99.5 (94.8, 104.2) | 113.4 (109.0, 117.8) | 116.7 (113.3, 120.1) | 124.3 (120.8, 127.9) | 130.4 (126.2, 134.6) | <0.001 |
| M35 | 99.2 (94.7, 103.8) | 113.0 (108.6, 117.5) | 116.5 (113.1, 119.8) | 124.6 (120.8, 128.4) | 131.0 (126.3, 135.7) | <0.001 |
| HDL-C (mg/dL) |  |  |  |  |  |  |
| M13 | 57.6 (56.0, 59.3) | 55.3 (53.1, 57.5) | 55.7 (53.5, 57.9) | 52.4 (50.1, 54.8) | 48.3 (46.1, 50.5) | <0.001 |
| M24 | 55.5 (54.1, 56.8) | 54.3 (52.9, 55.7) | 55.2 (53.2, 57.2) | 53.9 (51.9, 55.8) | 50.6 (48.4, 52.9) | <0.001 |
| M35 | 55.3 (54.0, 56.6) | 54.1 (52.7, 55.6) | 55.1 (53.2, 57.1) | 53.9 (52.0, 55.9) | 50.9 (48.5, 53.3) | <0.001 |
| TG6 (mg/dL) |  |  |  |  |  |  |
| M13 | 70.2 (66.8, 73.8) | 85.9 (82.6, 89.4) | 103.2 (99.0, 107.5) | 130.6 (126.2, 135.2) | 190.1 (180.0, 200.7) | <0.001 |
| M24 | 72.7 (69.1, 76.6) | 87.7 (84.7, 90.8) | 103.5 (99.1, 108.1) | 127.5 (123.7, 131.5) | 183.6 (174.3, 193.5) | <0.001 |
| M35 | 73.3 (69.8, 77.0) | 88.5 (85.6, 91.5) | 103.8 (99.4, 108.5) | 126.6 (122.5, 130.9) | 181.3 (171.6, 191.5) | <0.001 |
| TC/HDL-C ratio |  |  |  |  |  |  |
| M13 | 3.11 (2.96, 3.27) | 3.56 (3.43, 3.70) | 3.75 (3.63, 3.87) | 4.22 (4.05, 4.40) | 5.06 (4.82, 5.30) | <0.001 |
| M24 | 3.27 (3.11, 3.42) | 3.65 (3.56, 3.75) | 3.75 (3.63, 3.88) | 4.12 (3.95, 4.29) | 4.92 (4.68, 5.16) | <0.001 |
| M35 | 3.27 (3.12, 3.43) | 3.66 (3.56, 3.76) | 3.75 (3.63, 3.88) | 4.11 (3.95, 4.28) | 4.19 (4.66, 5.16) | <0.001 |

1. Values are medians [ranges] for plasma Plasma Linoelaidic Acid concentration or adjusted means (95% CIs). HDL-C, high-density lipoprotein cholesterol; LDL-C, low-density lipoprotein cholesterol; NHANES, National Health and Nutrition Examination Survey; Q, quintile; TC, total cholesterol; TC/HDL-C ratios, total cholesterol and high-density lipoprotein cholesterol ratio; TFA, trans-fatty acid; TG, triclyceride.
2. P-values are presented for the linear difference across the quintiles of plasma TFA concentration. All tests were 2-tailed and based on Wald F-test.
3. Model 1 = adjusted for age, sex, race/ethnicity and total calorie intake.
4. Model 2 = in addition to Model 1, adjusted for educational attainment, smoking status, alcohol consumption, physical activity level, statins use, diabetes status, Healthy Eating Index-2010, and body mass index.
5. Model 3 = in addition to Model 2, adjusted for total polyunsaturated fatty acids, total saturated fat, total dietary TFA, and total cholesterol intake.
6. TG concentration were log transformed and presented as geometric means.

**Online Supporting Material**

**Supplemental Table 6** Triglycerides Adjusted Mean Lipid and Lipoprotein Concentrations Among Adult Participants Aged ≥20 Years by Quintiles of Plasma TFA Concentration—NHANES 1999-2000 and 2009-20101

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Quintiles of Plasma TFA Concentration (µmol/L) | | | | | | | |
|  | NHANES 1999-2000 | | | | NHANES 2009-2010 | | | |
| Lipid profiles | Q1 | Q3 | Q5 | P2 | Q1 | Q3 | Q5 | *P*-trend2 |
| Plasma TFA, µmol/L | 46.6  [11.0 - 55.6 ] | 80.6  [72.7 - 89.9 ] | 143  [117 - 596 ] |  | 21.1  [7.3 - 25.4 ] | 37.0  [33.4 - 41.2 ] | 68.0  [55.2 - 307 ] |  |
| TC (mg/dL) |  |  |  |  |  |  |  |  |
| Model 13 | 189 (184, 195) | 200 (197, 202) | 223 (215, 230) | <0.001 | 175  (170, 180) | 198 (194, 202) | 217  (212, 222) | <0.001 |
| Model 24 | 192  (185, 199) | 200 (197, 203) | 219 (209, 229) | <0.001 | 180  (175, 185) | 199 (196, 203) | 208  (204, 212) | <0.001 |
| LDL-C (mg/dL) |  |  |  |  |  |  |  |  |
| Model 13 | 118 (112, 123) | 125 (122, 128) | 135 (130, 141) | <0.001 | 102 (97, 107) | 119 (116, 123) | 129 (125, 133) | <0.001 |
| Model 24 | 116 (110, 123) | 124 (121, 127) | 139 (131, 147) | <0.001 | 104 (98.9, 108) | 120 (116, 123) | 127 (123, 130) | <0.001 |
| HDL-C (mg/dL) |  |  |  |  |  |  |  |  |
| Model 13 | 53.5 (51.4, 55.6) | 49.2 (47.7, 50.8) | 44.7 (43.1, 46.3) | <0.001 | 56.7 (54.8, 58.4) | 54.4 (52.8, 56.0) | 48.0 (46.4, 49.6) | <0.001 |
| Model 24 | 52.0 (50.0, 54.1) | 49.0 (47.5, 50.4) | 47.7 (45.4, 50.0) | 0.04 | 54.3 (52.5, 56.2) | 53.9 (52.4, 55.3) | 51.9 (50.2, 53.7) | 0.11 |
| TC/HDL-C ratio |  |  |  |  |  |  |  |  |
| Model 13 | 3.8 (3.7, 3.9) | 4.3 (4.2, 4.5) | 5.4 (5.2, 5.6) | <0.001 | 3.3  (3.1, 3.5) | 3.9  (3.8, 4.1) | 5.0 (4.8, 5.2) | <0.001 |
| Model 24 | 4.0 (3.8, 4.1) | 4.4 (4.2, 4.5) | 5.0 (4.8, 5.2) | <0.001 | 3.6  (3.4, 3.8) | 4.0  (3.9, 4.1) | 4.4 (4.2, 4.6) | <0.001 |

1. Values are medians [ranges] for plasma TFA concentration or adjusted means (95% CIs). HDL-C, high-density lipoprotein cholesterol; LDL-C, low-density lipoprotein cholesterol; NHANES, National Health and Nutrition Examination Survey; Q, quintile; TC, total cholesterol; TC/HDL-C ratios, total cholesterol and high-density lipoprotein cholesterol ratio; TFA, trans-fatty acid; TG, triclyceride.
2. P-values are presented for the linear difference across the quintiles of plasma TFA concentration. All tests were 2-tailed and based on Wald F-test.
3. Model 1 = adjusted for age, sex, race/ethnicity, educational attainment, smoking status, alcohol consumption, physical activity level, statins use, diabetes status, Healthy Eating Index-2010, body mass index, total polyunsaturated fatty acids, total saturated fat, total dietary TFA, and total cholesterol intake.
4. Model 2 = in addition to Model 1, adjusted for TG concentration (using three categories of TG: <150mg/dL, 150-199mg/dL, and ≥200mg/dL).