

Supplementary files

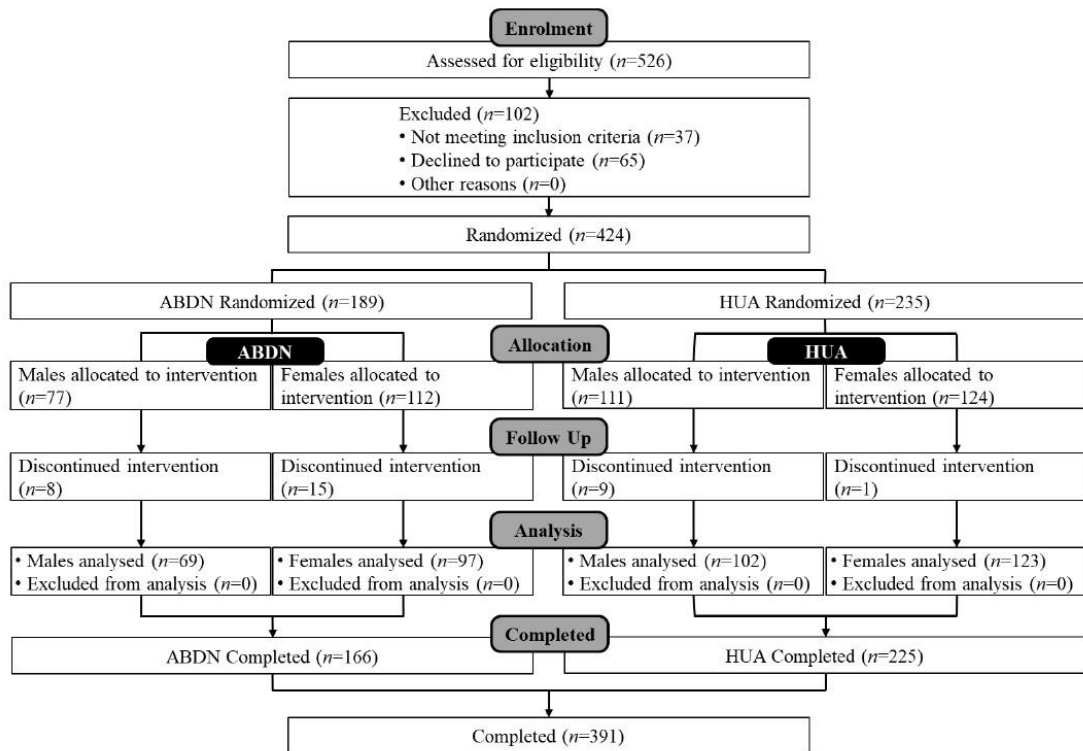


Figure S1. CONSORT diagram summarizing participant flow. The number of participants from both study sites who were recruited, enrolled, allocated to intervention, discontinued, included in the analyses and completed are presented. (ABDN) Scotland, (HUA) Greece.

Table S1. Schofield equations for estimating BMR.

| Gender | Age range (years) | BMR equation (MJ) |
|---------|-------------------|-------------------------|
| Males | 8-10 | $BMR = 0.095W + 2.110$ |
| | 10-17 | $BMR = 0.074W + 2.754$ |
| | 18-29 | $BMR = 0.063W + 2.896$ |
| | 30-59 | $BMR = 0.048W + 3.653$ |
| | 60-74 | $BMR = 0.0499W + 2.930$ |
| Females | 8-10 | $BMR = 0.085W + 2.033$ |
| | 10-17 | $BMR = 0.056W + 2.898$ |
| | 18-29 | $BMR = 0.062W + 2.036$ |
| | 30-59 | $BMR = 0.034W + 3.538$ |
| | 60-74 | $BMR = 0.0386W + 2.875$ |

(BMR), basal metabolic rate, (W) body weight.

Table S2. Nutritional values of the foods and drinks served at the *ad libitum* buffet-style test meal.

| | Food or drink products | Portion size | Energy (kcal) | Protein (g) | CHO (g) | Sugars (g) | NMES (g) | Fat (g) | Sat Fat (g) | Salt (g) |
|--------------------|--|----------------------------|---------------|-------------|---------|------------|----------|---------|-------------|----------|
| High-fat savory | Full fat cheese | 60g | 188.1 | 13.5 | 0.1 | 0.0 | 0.0 | 15.0 | 0.0 | 0.0 |
| | Full-fat cheese spread sandwich, white bread | 70g | 164 | 4.8 | 19.7 | 2.2 | 1.2 | 7.7 | 4.9 | 0.6 |
| | Crackers | 18g | 89.5 | 1.3 | 10.2 | 1.3 | 0.0 | 5.1 | 3.8 | 0.5 |
| Low-fat savory | Ready salted potato crisps | 65g | 334.8 | 4.2 | 31.9 | 0.3 | 0.0 | 22.1 | 1.7 | 1.0 |
| | Carrot sticks | 80g | 27.9 | 0.5 | 6.3 | 5.9 | 0.0 | 0.2 | 0.1 | 0.1 |
| | Cucumber sticks | 80g | 7.9 | 0.6 | 1.2 | 1.1 | 0.0 | 0.1 | 0.0 | 0.0 |
| | Breadsticks | 25g | 99.2 | 2.9 | 18.2 | 0.9 | 0.0 | 2.0 | 1.7 | 0.5 |
| Low-fat sweet | Rice Cakes | 21g | 85.0 | 1.8 | 18.9 | 0.3 | 0.0 | 0.6 | 0.3 | 0.0 |
| | Fat-free peach yogurt | 125g/200g ¹ | 70.0 | 6.0 | 11.6 | 11.4 | 0.0 | 0.1 | 0.0 | 0.2 |
| | Strawberry yogurt | 125g/200g ¹ | 113.0 | 4.4 | 15.6 | 15.3 | 0.0 | 4.0 | 2.5 | 0.2 |
| | Apples | 300g/2 apples ¹ | 155.4 | 0.9 | 39.0 | 39.0 | 0.0 | 0.3 | 0.0 | 0.0 |
| | Raisins | 80g | 221.6 | 1.7 | 55.4 | 55.4 | 55.4 | 0.3 | 0.0 | 0.1 |
| High-fat sweet | Cereal Bar | 23g | 85.7 | 1.8 | 17.7 | 8.7 | 0.0 | 1.2 | 0.8 | 0.1 |
| | Toblerone chocolate bar | 100g | 510.9 | 5.6 | 60.0 | 60.0 | 0.0 | 29.2 | 17.2 | 0.1 |
| | Kit Kat chocolate biscuit | 96g | 480.2 | 7.9 | 58.1 | 44.9 | 44.9 | 25.5 | 13.2 | 0.3 |
| | Mars bar | 54g | 239.5 | 2.9 | 35.9 | 35.5 | 35.5 | 10.2 | 5.4 | 0.2 |
| | Chocolate Brownie/ Chocolate Cookies ¹ | 80g | 335.8 | 4.8 | 44.9 | 35.4 | 0.0 | 16.3 | 9.8 | 0.4 |
| Beverages | Semi-skimmed milk | 300g | 140.2 | 9.9 | 15.0 | 15.0 | 0.0 | 4.8 | 3.0 | 0.4 |
| | Orange juice | 400mL/1000mL ¹ | 146.4 | 2.0 | 35.2 | 35.2 | 35.2 | 0.4 | 0.0 | 0.1 |
| | Apple juice | 400mL/1000mL ¹ | 156.7 | 0.4 | 39.6 | 39.6 | 39.6 | 0.4 | 0.0 | 0.0 |
| | Water, distilled | 500mL | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | Cola | 330mL | 135.0 | 0.0 | 34.7 | 34.7 | 34.7 | 0.0 | 0.0 | 0.1 |
| | Diet Coke | 330mL | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total | - | 3783.7 | 77.9 | 569.2 | 442.0 | 246.5 | 145.5 | 64.4 | 4.8 | |

¹ Alternative HUA weights or food products; (CHO) carbohydrates, (HUA) Greece, (NMES) non-milk extrinsic sugars, (Sat Fat) saturated fat.

Table S3. Number of participants completed within each group at both sites.

| Group | ABDN | HUA |
|------------------------------------|-------------|------------|
| 8-10 years, normal-weight females | 10 | 16 |
| 8-10 years, overweight females | 7 | 16 |
| 8-10 years, normal-weight males | 17 | 16 |
| 8-10 years, overweight males | 5 | 16 |
| 13-17 years, normal-weight females | 17 | 16 |
| 13-17 years, overweight females | 9 | 16 |
| 13-17 years, normal-weight males | 16 | 16 |
| 13-17 years, overweight males | 3 | 16 |
| 25-45 years, normal-weight females | 16 | 16 |
| 25-45 years, overweight females | 10 | 12 |
| 25-45 years, normal-weight males | 13 | 15 |
| 25-45 years, overweight males | 7 | 8 |
| 65-75 years, normal-weight females | 17 | 15 |
| 65-75 years, overweight females | 11 | 16 |
| 65-75 years, normal-weight males | 3 | 2 |
| 65-75 years, overweight males | 5 | 13 |
| Total | 166 | 225 |

(ABDN) Scotland, (HUA) Greece.

Table S4. Buffet-style test meal *ad libitum* energy and macronutrient intake for all participants combined¹.

| ALL | | NPWL | NPMT | HPWL | HPMT | SED_{type} | p_{type2} | NP | HP | SED_{composition} | p_{composition}¹ | WL | MT | SED_{quantity} | p_{quantity2} |
|----------------|------|-------------|-------------|-------------|-------------|---------------------------|--------------------------|-----------|-----------|----------------------------------|--|-----------|-----------|-------------------------------|------------------------------|
| Energy | kcal | 717 | 661 | 685 | 656 | 15 | < 0.001 | 689 | 670 | 11 | 0.168 | 701 | 658 | 11 | < 0.001 |
| | g | 27.99 | 25.47 | 26.70 | 25.63 | 0.72 | < 0.001 | 26.73 | 26.17 | 0.51 | 0.390 | 27.35 | 25.55 | 0.51 | < 0.001 |
| Fat | kcal | 248 | 225 | 236 | 227 | 6 | 0.326 | 237 | 232 | 5 | 0.961 | 242 | 226 | 5 | 0.202 |
| | % | 33.20 | 32.70 | 32.63 | 33.25 | 0.56 | < 0.001 | 32.95 | 32.94 | 0.40 | 0.251 | 32.92 | 32.98 | 0.40 | < 0.001 |
| Protein | g | 17.90 | 16.70 | 17.38 | 16.47 | 0.39 | 0.929 | 17.30 | 16.92 | 0.27 | 0.522 | 17.64 | 16.58 | 0.27 | 0.917 |
| | kcal | 73 | 68 | 67 | 71 | 2 | < 0.001 | 70 | 69 | 1 | 0.112 | 72 | 67 | 1 | < 0.001 |
| CHO | % | 10.80 | 10.78 | 10.91 | 11.00 | 2.56 | 0.416 | 10.79 | 10.96 | 0.18 | 0.783 | 10.85 | 10.89 | 0.18 | 0.288 |
| | g | 101.37 | 93.96 | 96.81 | 92.57 | 2.12 | 0.002 | 97.67 | 94.69 | 1.50 | 0.295 | 99.10 | 93.26 | 1.50 | < 0.001 |
| Fiber | kcal | 388 | 360 | 371 | 354 | 8 | 0.002 | 374 | 362 | 6 | 0.535 | 379 | 357 | 6 | < 0.001 |
| | % | 54.84 | 55.27 | 55.23 | 54.51 | 0.59 | 0.332 | 55.06 | 54.87 | 0.42 | 0.169 | 55.04 | 54.89 | 0.42 | 0.169 |
| Fiber | g | 4.12 | 3.91 | 3.99 | 3.82 | 0.10 | 0.002 | 4.01 | 3.91 | 0.07 | 0.295 | 4.05 | 3.86 | 0.07 | < 0.001 |
| | kcal | 8 | 7 | 8 | 7 | 0 | 0.332 | 8 | 7 | 0 | 0.535 | 8 | 7 | 0 | < 0.001 |
| | % | 1.16 | 1.25 | 1.22 | 1.24 | 0.05 | 0.332 | 1.20 | 1.23 | 0.03 | 0.535 | 1.19 | 1.24 | 0.03 | 0.169 |

¹ $n = 391$; ² Determined by ANOVA, differences are statistically significant when $p < 0.05$; Mean data are presented for drink type (NPWL, NPMT, HPWL, HPMT), drink composition (NP, HP) and drink quantity (WL vs MT); (CHO) Carbohydrates, (HP) high protein, (HPMT) high-protein maintenance, (HPWL) high-protein weight loss, (MT) weight maintenance, (NP) normal protein, (NPMT) normal-protein maintenance, (NPWL) normal-protein weight loss, (WL) weight loss.

Table S5. Effect of visit number on *ad libitum* EI¹.

| | Children ($n = 103$) | Adolescents ($n = 109$) | Adults ($n = 97$) | Elderly ($n = 82$) | SED | p_{Age.Visit}¹ | All | SED | p_{Visit} |
|----------------|--|---|-------------------------------------|--------------------------------------|------------|--|------------------|------------|--------------------------|
| Visit 1 | 706 | 886 | 548 | 430 | | | 659 ^a | | |
| Visit 2 | 663 | 957 | 623 | 492 | 53.4 | < 0.001 | 699 ^b | 13.1 | 0.001 |
| Visit 3 | 684 | 962 | 641 | 478 | | | 707 ^b | | |
| Visit 4 | 661 | 886 | 640 | 518 | | | 688 ^b | | |

¹ Mean data are presented for each age group and all age groups combined ($n = 391$); ¹ Determined by ANOVA (with age as fixed factor), differences are statistically significant when $p < 0.05$; ^{a, b} Mean values within a row with unlike superscript letters are significantly different.

Table S6. Mean food reward (liking and wanting) results¹.

| | Group | Liking | | | | | | Wanting | | | | | |
|--------|---------------------------------------|--------------------|------|-----------------------|--------------------|------|-----------------------|---------------------|------|-----------------------|----------------------|------|-----------------------|
| | | Fat ² | SEM | <i>p</i> ³ | Sweet ⁴ | SEM | <i>p</i> ³ | Fat ^{2,5} | SEM | <i>p</i> ³ | Sweet ^{4,6} | SEM | <i>p</i> ³ |
| SITE | HUA (<i>n</i> = 225) | -5.55 | 1.50 | < 0.001 | 3.38 | 1.35 | 0.019 | -14.38 | 2.48 | < 0.001 | 3.97 | 3.18 | 0.019 |
| | ABDN (<i>n</i> = 164) | 1.81 | 1.27 | | 8.32 | 1.60 | | 5.19 | 2.93 | | 14.70 | 3.26 | |
| GENDER | Males (<i>n</i> = 169) | -1.33 | 1.60 | 0.585 | 5.91 | 1.70 | 0.953 | -3.84 | 3.12 | 0.693 | 11.69 | 3.82 | 0.301 |
| | Females (<i>n</i> = 220) | -2.41 | 1.14 | | 5.79 | 1.21 | | -5.36 | 2.23 | | 6.97 | 2.48 | |
| BMI | Normal Weight (<i>n</i> = 220) | -3.36 | 1.36 | 0.131 | 7.93 | 1.44 | 0.047 | -7.21 | 2.65 | 0.174 | 13.65 | 3.34 | 0.059 |
| | Overweight (<i>n</i> = 169) | -0.38 | 1.42 | | 3.77 | 1.51 | | -1.98 | 2.78 | | 5.01 | 3.10 | |
| AGE | Children (<i>n</i> = 101) | -1.51 | 1.78 | 0.001 | 7.91 | 1.89 | 0.093 | 3.98 ^a | 3.49 | < 0.001 | 16.70 ^a | 3.88 | < 0.001 |
| | Adolescents (<i>n</i> = 109) | 4.22 ^a | 1.85 | | 6.42 | 1.96 | | 6.89 ^a | 3.60 | | 12.34 ^a | 4.01 | |
| | Adults (<i>n</i> = 97) | -3.11 ^b | 1.76 | | 1.71 | 1.87 | | -12.07 ^b | 3.43 | | -5.99 ^b | 3.82 | |
| | Elderly (<i>n</i> = 82) | -7.08 ^b | 2.41 | | 7.35 | 2.56 | | -17.17 ^b | 4.70 | | 14.27 ^a | 6.10 | |

Values are mean ± SEM. ¹*n* = 389; ² Positive scores indicate greater liking/wanting for high-fat relative to low-fat foods, whereas negative scores indicate greater liking/wanting for low-fat relative to high-fat foods; ³ Determined by using univariate ANOVA (with site, gender, BMI and age as fixed factors), differences are statistically significant when *p* < 0.05. Unlike letters indicate significant difference in post hoc analyses with Bonferroni adjustment; ⁴ Positive scores indicate greater liking/wanting for sweet relative to savory foods, whereas negative scores indicate greater liking/wanting for savory relative to sweet foods; ⁵ Two extreme outliers were removed from the analyses of this parameter: both HUA, children and overweight, 1 female and 1 male; ⁶ Two extreme outliers were removed from the analyses of this parameter: both HUA, male, 1 elderly lean and 1 child with overweight; (ABDN) Scotland, (HUA) Greece.

Table S7. Combined adult and elderly glucose homeostasis, by group, at baseline and post-test drink consumption¹.

| | Group | Time (mins) | Glucose (mmol/L) | SED | p^2 | Insulin (pmol/L) | SED | p^2 | HOMA-IR | SED | p^2 | IGI | SED | p^2 | IGR | SED | p^2 |
|--------|-------------------------------|-------------|------------------|------|---------|------------------|------|---------|---------|-------|---------|-------|-------|-------|--------|--------|---------|
| AGE | Adults ($n = 93$) | 0 | 5.48 | 0.21 | < 0.001 | 44.0 | 34.0 | < 0.001 | 0.002 | 0.001 | < 0.001 | 0.061 | 0.082 | 0.450 | 0.0008 | 0.0005 | < 0.001 |
| | | 30 | 6.58 | | | 535 | | | 0.023 | | | 0.588 | | | 0.0100 | | |
| | | 60 | 5.18 | | | 421 | | | 0.015 | | | 0.884 | | | 0.0106 | | |
| | | 120 | 5.07 | | | 223 | | | 0.008 | | | 0.391 | | | 0.0051 | | |
| | | 0 | 5.77 | | | 56.6 | | | 0.002 | | | 0.055 | | | 0.0016 | | |
| | | 30 | 7.07 | | | 536 | | | 0.024 | | | 0.457 | | | 0.0123 | | |
| BMI | Elderly ($n = 79$) | 60 | 6.32 | | | 596 | | | 0.026 | | | 0.848 | | | 0.0135 | | |
| | | 120 | 5.81 | | | 353 | | | 0.015 | | | 0.447 | | | 0.0083 | | |
| | | 0 | 5.39 | 0.22 | < 0.001 | 32.3 | 34.3 | < 0.001 | 0.001 | 0.001 | < 0.001 | 0.040 | 0.083 | 0.903 | 0.0011 | 0.0005 | 0.006 |
| | | 30 | 6.56 | | | 475 | | | 0.020 | | | 0.488 | | | 0.0115 | | |
| | | 60 | 5.18 | | | 409 | | | 0.014 | | | 0.867 | | | 0.0112 | | |
| | | 120 | 4.87 | | | 195 | | | 0.007 | | | 0.382 | | | 0.0059 | | |
| GENDER | Normal Weight ($n = 90$) | 0 | 5.86 | | | 69.1 | | | 0.003 | | | 0.079 | | | 0.0013 | | |
| | | 30 | 7.07 | | | 602 | | | 0.027 | | | 0.571 | | | 0.0107 | | |
| | | 60 | 6.28 | | | 602 | | | 0.025 | | | 0.868 | | | 0.0129 | | |
| | | 120 | 6.00 | | | 379 | | | 0.016 | | | 0.454 | | | 0.0075 | | |
| | | 0 | 5.57 | 0.22 | 0.036 | 51.9 | 35.3 | 0.097 | 0.002 | 0.002 | 0.212 | 0.060 | 0.085 | 0.346 | 0.0012 | 0.0005 | 0.005 |
| | | 30 | 6.61 | | | 519 | | | 0.024 | | | 0.421 | | | 0.0100 | | |
| SITE | Males ($n = 64$) | 60 | 5.53 | | | 546 | | | 0.022 | | | 0.798 | | | 0.0114 | | |
| | | 120 | 5.28 | | | 324 | | | 0.014 | | | 0.428 | | | 0.0071 | | |
| | | 0 | 5.69 | | | 48.6 | | | 0.002 | | | 0.057 | | | 0.0012 | | |
| | | 30 | 7.13 | | | 546 | | | 0.022 | | | 0.591 | | | 0.0117 | | |
| | | 60 | 6.00 | | | 492 | | | 0.018 | | | 0.909 | | | 0.0123 | | |
| | | 120 | 5.63 | | | 258 | | | 0.010 | | | 0.409 | | | 0.0063 | | |
| SITE | Females ($n = 108$) | 0 | 5.60 | 0.21 | 0.008 | 51.3 | 34.2 | 0.005 | 0.002 | 0.001 | 0.017 | 0.055 | 0.083 | 0.084 | 0.0012 | 0.0005 | 0.005 |
| | | 30 | 6.83 | | | 563 | | | 0.024 | | | 0.538 | | | 0.0116 | | |
| | | 60 | 5.82 | | | 560 | | | 0.022 | | | 0.974 | | | 0.0131 | | |
| | | 120 | 5.31 | | | 303 | | | 0.012 | | | 0.503 | | | 0.0071 | | |
| | | 0 | 5.63 | | | 47.9 | | | 0.002 | | | 0.062 | | | 0.0012 | | |
| | | 30 | 6.76 | | | 500 | | | 0.021 | | | 0.514 | | | 0.0104 | | |
| SITE | ABDN ($n = 75$) | 60 | 5.56 | | | 425 | | | 0.016 | | | 0.731 | | | 0.0105 | | |

120

5.54

255

0.010

0.305

0.0060

¹ Data are presented as mean concentrations, $n = 172$; 7 ABDN participants (4 normal weight adults, 3 normal weight elderly) did not complete this measurement; ² Determined by ANOVA, Group.Time interactions (p) are statistically significant when $p < 0.05$; (ABDN) Scotland, (HOMA-IR) homeostatic model assessment for insulin resistance, (HUA) Greece, (IGI) insulinogenic index, (IGR) Insulin-Glucose Ratio.

Table S8. Combined adult and elderly¹ glucose homeostasis at baseline and in response to test drink type, composition and quantity.

| Drink | Time (mins) | Glucose (mmol/L) | SED | p^2 | Insulin (pmol/L) | SED | p^2 | HOMA-IR | SED | p^2 | IGI | SED | p^2 | IGR | SED | p^2 | | |
|----------|-------------|------------------|------|---------|------------------|---------|---------|---------|---------|---------|---------|---------|--------|---------|---------|---------|---------|---------|
| Type | NPWL | 0 | 5.64 | | 50.3 | | | 0.002 | | | 0.054 | | | 0.0012 | | | | |
| | | 30 | 7.20 | | 538 | | | 0.025 | | | 0.438 | | | 0.0104 | | | | |
| | | 60 | 6.06 | | 488 | | | 0.020 | | | 0.533 | | | 0.0110 | | | | |
| | | 120 | 5.24 | | 230 | | | 0.009 | | | 0.341 | | | 0.0054 | | | | |
| | NPMT | 0 | 5.61 | | 49.1 | | | 0.002 | | | 0.063 | | | 0.0012 | | | | |
| | | 30 | 7.09 | | 548 | | | 0.025 | | | 0.473 | | | 0.0109 | | | | |
| | | 60 | 6.10 | | 550 | | | 0.023 | | | 0.922 | | | 0.0124 | | | | |
| | | 120 | 5.90 | | 401 | | | 0.017 | | | 0.478 | | | 0.0090 | | | | |
| | Composition | HPWL | 0 | 5.61 | 0.10 | < 0.001 | 48.8 | 22.7 | < 0.001 | 0.002 | 0.001 | < 0.001 | 0.061 | 0.114 | < 0.001 | 0.0012 | 0.0005 | < 0.001 |
| | | | 30 | 6.41 | | 492 | | | 0.020 | | | 0.568 | | | 0.0107 | | | |
| | | | 60 | 5.30 | | 442 | | | 0.017 | | | 0.734 | | | 0.0111 | | | |
| | | | 120 | 5.03 | | 175 | | | 0.007 | | | 0.330 | | | 0.0043 | | | |
| HPMT | | 0 | 5.60 | | 51.1 | | | 0.002 | | | 0.055 | | | 0.0012 | | | | |
| | | 30 | 6.51 | | 565 | | | 0.023 | | | 0.632 | | | 0.0123 | | | | |
| | | 60 | 5.36 | | 524 | | | 0.019 | | | 1.282 | | | 0.0134 | | | | |
| | | 120 | 5.46 | | 324 | | | 0.013 | | | 0.515 | | | 0.0077 | | | | |
| NP | | 0 | 5.62 | | 49.7 | | | 0.002 | | | 0.059 | | | 0.0012 | | | | |
| | | 30 | 7.15 | | 543 | | | 0.025 | | | 0.455 | | | 0.0107 | | | | |
| | | 60 | 6.08 | | 519 | | | 0.021 | | | 0.727 | | | 0.0117 | | | | |
| | | 120 | 5.57 | | 316 | | | 0.013 | | | 0.410 | | | 0.0072 | | | | |
| HP | 0 | 5.61 | 0.08 | < 0.001 | 50.0 | 20.0 | < 0.001 | 0.002 | 0.001 | < 0.001 | 0.058 | 0.082 | 0.040 | 0.0012 | 0.0004 | < 0.001 | | |
| | 30 | 6.46 | | 528 | | | 0.022 | | | 0.600 | | | 0.0115 | | | | | |
| | 60 | 5.33 | | 483 | | | 0.018 | | | 1.008 | | | 0.0123 | | | | | |
| | 120 | 5.25 | | 250 | | | 0.010 | | | 0.423 | | | 0.0060 | | | | | |
| Quantity | WL | 0 | 5.63 | | 49.5 | | | 0.002 | | | 0.058 | | | 0.0012 | | | | |
| | | 30 | 6.81 | | 515 | | | 0.022 | | | 0.503 | | | 0.0106 | | | | |
| | | 60 | 5.68 | | 465 | | | 0.018 | | | 0.634 | | | 0.0111 | | | | |
| | | 120 | 5.14 | 0.08 | < 0.001 | 203 | 20.0 | < 0.001 | 0.008 | 0.001 | < 0.001 | 0.336 | 0.082 | < 0.001 | 0.0049 | 0.0004 | < 0.001 | |
| MT | 0 | 5.60 | | 50.1 | | | 0.002 | | | 0.059 | | | 0.0012 | | | | | |
| | 30 | 6.80 | | 557 | | | 0.024 | | | 0.552 | | | 0.0116 | | | | | |

| | | | | | |
|-----|------|-----|-------|-------|--------|
| 60 | 5.73 | 537 | 0.021 | 1.101 | 0.0129 |
| 120 | 5.68 | 363 | 0.015 | 0.497 | 0.0084 |

¹ Data are presented as mean concentrations, $n = 172$; 7 ABDN participants (4 normal weight adults, 3 normal weight elderly) did not complete this measurement; ² Determined by ANOVA, Drink.Time interactions (p) are statistically significant when $p < 0.05$; (ABDN), Scotland, (HOMA-IR) homeostatic model assessment for insulin resistance, (HP) high-protein, (HPMT) high-protein maintenance, (HPWL) high-protein weight loss, (IGI) Insulinogenic index, (IGR) Insulin-Glucose Ratio, (MT) weight maintenance, (NP) normal-protein, (NPMT) normal-protein maintenance, (NPWL) normal-protein weight loss, (WL) weight loss.