

Table S1. Values of the PSQ₃₀ before and during the dietary intervention

	Verum group (<i>n</i> = 29) ¹ mean ± SD median (Q1/Q3)					Placebo group (<i>n</i> = 30) ¹ mean ± SD median (Q1/Q3)					V vs. P <i>p</i> -Value ^b	
	Baseline	Week 8	Week 12	Difference 8 weeks	Difference 12 weeks	Baseline	Week 8	Week 12	Difference 8 weeks	Difference 12 weeks	8 weeks	12 weeks
Total PSQ₃₀ score	0.67 ± 0.12 0.66 (0.56/0.79)	0.54 ± 0.16 0.51 (0.44/0.69)	0.48 ± 0.16 0.47 (0.35/0.59)	-0.13 ± 0.14** -0.11 (-0.21/-0.04)	-0.19 ± 0.16** -0.18 (-0.32/-0.06)	0.66 ± 0.12 0.68 (0.53/0.75)	0.607 ± 0.127 0.600 (0.54/0.71)	0.58 ± 0.16 0.57 (0.45/0.70)	-0.06 ± 0.12* -0.07 (-0.14/0.03)	-0.08 ± 0.12** -0.09 (-0.16/-0.01)	0.092	0.012
Harassment	2.8 ± 0.5 2.8 (2.2/3.2)	2.4 ± 0.5 2.5 (2.0/2.8)	2.2 ± 0.6 2.0 (1.8/2.5)	-0.4 ± 0.6* -0.5 (-0.8/0.0)	-0.6 ± 0.7** -0.5 (-1.1/0.0)	2.8 ± 0.5 2.8 (2.4/3.1)	2.6 ± 0.6 2.5 (2.2/3.0)	2.5 ± 0.6 2.5 (2.0/3.1)	-0.2 ± 0.6 -0.2 (-0.5/0.0)	-0.3 ± 0.6* -0.4 (-0.8/0.1)	0.370	0.067
Overload	3.1 ± 0.5 3.2 (2.8/3.5)	2.7 ± 0.6 2.5 (2.2/3.1)	2.6 ± 0.7 2.5 (2.1/3.0)	-0.4 ± 0.4** -0.5 (-0.8/0.0)	-0.5 ± 0.5** -0.5 (-1.0/0.0)	3.1 ± 0.5 3.1 (2.8/3.5)	3.0 ± 0.5 3.0 (2.5/3.3)	2.9 ± 0.7 (2.9 (2.5/3.5)	-0.1 ± 0.5 -0.2 (-0.5/0.1)	-0.2 ± 0.5* 0.0 (-0.5/0.0)	0.046	0.014
Irritability	3.0 ± 0.6 3.0 (2.8/3.5)	2.7 ± 0.7 2.5 (2.0/3.2)	2.4 ± 0.6 2.5 (2.0/3.0)	-0.3 ± 0.7* -0.5 (-1.0/0.0)	-0.6 ± 0.7** -1.0 (-1.0/0.0)	2.8 ± 0.6 3.0 (2.5/3.5)	2.8 ± 0.6 3.0 (2.5/3.0)	2.6 ± 0.6 2.5 (2.4/3.0)	0.0 ± 0.6 0.0 (-0.5/0.5)	-0.2 ± 0.6* 0.0 (-0.5/0.0)	0.143	0.030
Lack of joy	3.0 ± 0.4 3.0 (2.8/3.4)	2.7 ± 0.5 2.9 (2.3/3.1)	2.6 ± 0.4 2.6 (2.2/2.9)	-0.3 ± 0.5* -0.3 (-0.8/0.1)	-0.4 ± 0.4** -0.4 (-0.6/-0.1)	3.0 ± 0.5 3.1 (2.7/3.4)	2.9 ± 0.4 2.9 (2.7/3.3)	2.9 ± 0.6 2.8 (2.5/3.3)	-0.1 ± 0.3 -0.2 (-0.3/0.1)	-0.1 ± 0.4* -0.1 (-0.3/0.1)	0.199	0.006
Fatigue	3.3 ± 0.4 3.2 (3.0/3.8)	2.9 ± 0.6 3.0 (2.5/3.4)	2.7 ± 0.5 2.8 (2.2/3.0)	-0.4 ± 0.7* -0.2 (-0.8/0.0)	-0.6 ± 0.6** -0.5 (-0.9/-0.2)	3.3 ± 0.4 3.2 (3.0/3.6)	3.0 ± 0.5 3.2 (2.8/3.5)	3.0 ± 0.5 3.0 (2.5/3.5)	-0.2 ± 0.4* -0.2 (-0.5/0.0)	-0.3 ± 0.5* -0.2 (-0.8/0.0)	0.339	0.034
Worries	2.8 ± 0.6 2.8 (2.2/3.4)	2.3 ± 0.7 2.2 (1.8/2.9)	2.2 ± 0.6 2.0 (1.8/2.8)	-0.5 ± 0.5** -0.6 (-0.8/0.0)	-0.6 ± 0.6** -0.6 (-1.0/-0.2)	2.8 ± 0.4 2.8 (2.6/3.2)	2.6 ± 0.4 2.6 (2.4/3.0)	2.5 ± 0.6 2.4 (2.0/3.0)	-0.2 ± 0.4* -0.2 (-0.4/0.0)	-0.4 ± 0.5** -0.4 (-0.6/-0.2)	0.121	0.140
Tension	3.1 ± 0.4 3.0 (2.8/3.5)	2.6 ± 0.6 2.5 (2.0/3.0)	2.4 ± 0.7 2.2 (2.0/2.8)	-0.5 ± 0.5** -0.5 (-0.8/-0.2)	-0.7 ± 0.6** -0.8 (-1.2/-0.1)	3.0 ± 0.5 3.0 (2.5/3.3)	2.8 ± 0.6 2.8 (2.2/3.1)	2.7 ± 0.6 2.6 (2.2/3.1)	-0.2 ± 0.6 -0.2 (-0.6/0.2)	-0.3 ± 0.6* -0.2 (-0.8/0.2)	0.077	0.012

Abbreviations: PSQ, Perceived Stress Questionnaire; SD, standard deviation; Q1/Q3, first quartile/third quartile; ¹Intention to treat (ITT) population; *p*-Value: **, *p* < 0.001; *, *p* < 0.05 (Wilcoxon-test within groups), ^b Mann-Whitney U test.

Table S2. Values of the PNF before and after the dietary intervention

	Verum group (<i>n</i> = 29) ¹ mean ± SD median (Q1/Q3)					Placebo group (<i>n</i> = 30) ¹ mean ± SD median (Q1/Q3)					V vs. P <i>p</i> -Value ^b	
	Baseline	Week 8	Week 12	Difference 8 weeks	Difference 12 weeks	Baseline	Week 8	Week 12	Difference 8 weeks	Difference 12 weeks	8 weeks	12 weeks
Total PNF points	53.7 ± 13.2 55.0 (43.5/62.0)	a	39.3 ± 14.4 36.0 (29.0/47.5)	-	-14.3 ± 11.8** -14.0 (-21.0/-6.5)	48.3 ± 10.4 48.5 (39.8/54.2)	a	41.3 ± 14.6 41.5 (29.5/52.8)	-	-7.0 ± 12.5* -8.0 (-15.2/-0.8)	-	0.063
Psycho-neuro-vegetative stability	19.0 ± 5.2 19.0 (15.0/23.0)	a	13.3 ± 4.7 12.0 (10.0/16.5)	-	-5.7 ± 4.7** -6.0 (-8.5/-2.0)	17.9 ± 4.4 18.0 (14.0/21.0)	a	14.6 ± 5.2 15.0 (11.0/17.2)	-	-3.3 ± 5.2* -4.0 (-7.0/-0.8)	-	0.136
Neurological symptoms	7.2 ± 3.7 7.0 (5.0/9.0)	a	4.6 ± 2.9 4.0 (2.5/6.5)	-	-2.6 ± 2.5** -2.0 (-4.5/-1.0)	6.3 ± 3.5 6.0 (4.0/8.2)	a	4.8 ± 3.4 4.0 (3.0/6.2)	-	-1.5 ± 3.2* -1.5 (-4.0/0.0)	-	0.246
Impulsion	11.8 ± 3.7 12.0 (9.0/14.5)	a	8.4 ± 4.5 8.0 (5.5/12.0)	-	-3.4 ± 3.6** -3.0 (-5.5/-1.0)	9.8 ± 3.3 10.0 (7.8/12.0)	a	9.1 ± 4.1 8.0 (6.0/13.0)	-	-0.7 ± 3.4 -1.5 (-3.2/1.2)	-	0.010
Excitability	5.7 ± 2.9 5.0 (4.0/8.0)	a	4.5 ± 2.9 4.0 (2.0/6.0)	-	-1.2 ± 2.2* -1.0 (-3.0/0.5)	4.9 ± 2.0 5.0 (4.0/6.2)	a	4.3 ± 2.4 4.0 (2.0/6.2)	-	-0.6 ± 2.0 0.0 (-2.0/1.0)	-	0.334
Concentration and memory	9.9 ± 3.7 11.0 (6.5/12.5)	a	8.5 ± 3.9 8.0 (6.0/9.5)	-	-1.4 ± 3.0* -1.0 (-4.0/0.5)	9.4 ± 2.9 9.0 (7.0/12.2)	a	8.5 ± 3.2 8.5 (6.0/11.2)	-	-0.9 ± 2.9 -0.5 (-3.2/1.0)	-	0.507

Abbreviations: PNF, Psychological Neurological Questionnaire; SD, standard deviation; Q1/Q3, first quartile/third quartile; ¹Intention to treat (ITT) population; ^a not implemented according to the study protocol; *p*-Value: **, *p* < 0.001; *, *p* < 0.05 (Wilcoxon- test within groups), ^b Mann-Whitney U test.

Table S3. Values of the VAS before and during the dietary intervention

	Verum group (<i>n</i> = 29) ¹ mean ± SD median (Q1/Q3)					Placebo group (<i>n</i> = 30) ¹ mean ± SD median (Q1/Q3)					V vs. P <i>p</i> -Value ^b	
	Baseline	Week 8	Week 12	Difference 8 weeks	Difference 12 weeks	Baseline	Week 8	Week 12	Difference 8 weeks	Difference 12 weeks	8 weeks	12 weeks
Total VAS points	15.9 ± 3.6 16.0 (14.0/18.0)	14.1 ± 3.7 14.0 (12.0/16.0)	12.7 ± 4.4 14.0 (8.5/16.0)	-1.8 ± 3.9 -2.0 (-4.5/0.5)	-3.3 ± 4.2** -2.0 (-6.0/-1.0)	15.3 ± 3.6 15.5 (12.8/17.2)	15.0 ± 3.8 15.0 (12.8/17.2)	14.5 ± 4.3 15.0 (10.0/17.5)	-0.3 ± 4.6 -1.0 (-4.0/3.2)	-0.8 ± 5.5 -2.0 (-5.0/3.0)	0.284	0.178
Lack of motivation	3.1 ± 1.0 3.0 (2.5/4.0)	2.7 ± 0.8 3.0 (2.0/3.0)	2.4 ± 1.1 2.0 (1.5/3.0)	-0.4 ± 1.1 -1.0 (-1.0/0.5)	-0.7 ± 1.1* -1.0 (-1.0/0.0)	3.2 ± 0.9 3.0 (3.0/4.0)	2.9 ± 1.0 3.0 (2.0/4.0)	2.9 ± 1.0 3.0 (2.0/4.0)	-0.3 ± 1.2 0.0 (-1.0/0.2)	-0.4 ± 1.3 -1.0 (-1.0/0.2)	0.671	0.558
Indifference	3.0 ± 1.0 3.0 (2.5/4.0)	2.4 ± 1.1 2.0 (2.0/3.5)	2.2 ± 1.0 2.0 (1.0/3.0)	-0.5 ± 1.3* 0.0 (-1.0/0.0)	-0.8 ± 1.1* 0.0 (-2.0/0.0)	2.8 ± 1.0 3.0 (2.0/4.0)	2.8 ± 1.0 3.0 (2.0/3.0)	2.5 ± 1.1 2.0 (2.0/3.0)	-0.0 ± 1.2 0.0 (-1.0/1.0)	-0.3 ± 1.5 -0.5 (-2.0/1.0)	0.155	0.235
Fatigue	3.4 ± 1.1 3.0 (3.0/4.0)	3.1 ± 1.1 3.0 (3.0/4.0)	2.8 ± 1.2 3.0 (2.0/4.0)	-0.3 ± 1.3 0.0 (-1.0/1.0)	-0.6 ± 1.3* 0.0 (-1.5/0.0)	3.5 ± 1.0 4.0 (3.0/4.0)	3.4 ± 1.1 3.0 (3.0/4.0)	3.5 ± 1.0 3.0 (3.0/4.2)	-0.1 ± 1.4 0.0 (-1.0/1.0)	0.0 ± 1.3 0.0 (-1.0/1.0)	0.728	0.096
Mood changes	3.2 ± 0.9 3.0 (3.0/4.0)	2.9 ± 1.0 3.0 (2.0/3.5)	2.7 ± 1.0 3.0 (2.0/3.0)	-0.3 ± 1.1 0.0 (-1.0/0.0)	-0.5 ± 1.1* 0.0 (-1.0/0.0)	2.8 ± 1.0 3.0 (2.0/4.0)	2.9 ± 1.1 3.0 (2.0/4.0)	2.6 ± 1.1 2.0 (2.0/3.0)	0.1 ± 1.2 0.0 (-1.0/1.0)	-0.2 ± 1.5 0.0 (-1.0/1.0)	0.250	0.389
Productivity	3.1 ± 1.1 3.0 (2.0/4.0)	2.9 ± 0.8 3.0 (2.0/3.0)	2.5 ± 1.0 2.0 (2.0/3.0)	-0.2 ± 0.9 0.0 (-1.0/0.0)	-0.6 ± 1.1* -1.0 (-1.0/0.0)	2.9 ± 0.9 3.0 (2.8/3.2)	3.0 ± 1.0 3.0 (2.0/4.0)	3.0 ± 0.9 3.0 (2.0/4.0)	0.1 ± 1.2 0.0 (-1.0/1.0)	0.0 ± 1.2 0.0 (-1.0/1.0)	0.364	0.040

Abbreviations: VAS, visual analogue scales; SD, standard deviation; Q1/Q3, first quartile/third quartile; ¹Intention to treat (ITT) population; *p*-Value: **, *p* < 0.001; *, *p* < 0.05 (Wilcoxon- test within groups), ^b Mann-Whitney U test.

Table S4. Changes in salivary cortisol, serotonin, mineral, and vitamin concentrations during the dietary intervention

	Verum group (<i>n</i> = 29) ¹			Placebo group (<i>n</i> = 30) ¹			V vs. P <i>p</i> -Value ^a
	Mean ± SD Median (Q1/Q3)			Mean ± SD Median (Q1/Q3)			
	Baseline	Week 12	Difference	Baseline	Week 12	Difference	12 weeks
Salivary							
Cortisol_morning (ng/ml)	12.54 ± 6.61 12.2 (3.2/25.4)	13.96 ± 5.76 13.3 (5.3/26.7)	1.42 ± 8.17 1.4 (-14.9/15.4)	14.62 ± 4.55 14.6 (5.0/21.5)	15.08 ± 6.64 14.35 (4.2/27.2)	0.47 ± 5.78 0.95 (-9.1/11.8)	0.596
Cortisol_evening (ng/ml)	3.00 ± 4.90 1.50 (1.20/2.50)	2.07 ± 1.80 1.70 (1.20/2.45)	-0.93 ± 5.03 -0.10 (-0.70/0.40)	2.04 ± 2.49 1.25 (0.90/2.05)	2.59 ± 3.60 1.50 (0.88/2.52)	0.55 ± 4.10 -0.05 (-0.52/0.72)	0.495
Δ cortisol (m – e) (ng/ml)	9.54 ± 6.37 9.70 (2.95/12.85)	11.89 ± 6.05 11.20 (6.50/17.30)	2.34 ± 7.32 1.10 (-2.25/8.80)	12.57 ± 5.35 13.00 (9.00/16.78)	12.49 ± 7.98 12.25 (8.02/18.40)	-0.08 ± 7.60 0.50 (-5.78/5.58)	0.300
Serum							
Serotonin (μg/L)	137.7 ± 58.0 126.0 (92.0/182.5)	138.7 ± 57.3 129.0 (87.0/186.5)	1.0 ± 20.9 2.0 (-6.5/12.0)	150.1 ± 80.9 136.5 (107.0/165.5)	140.5 ± 99.8 121.0 (84.8/143.5)	-9.6 ± 32.4* -8.5 (-25.5/3.8)	0.047
Folic acid (ng/mL) ^b	9.67 ± 4.13 8.60 (6.55/12.40)	18.18 ± 2.84 20.00 (16.45/20.00)	8.51 ± 4.38** 10.00 (5.75/11.50)	9.48 ± 3.08 8.20 (7.65/10.85)	8.93 ± 3.71 7.80 (6.28/11.05)	-0.55 ± 2.48 -0.70 (-1.75/0.75)	< 0.001
Magnesium (mmol/L)	0.87 ± 0.06 0.87 (0.84/0.90)	0.87 ± 0.05 0.85 (0.82/0.90)	-0.00 ± 0.04 -0.01 (-0.03/0.03)	0.89 ± 0.06 0.90 (0.85/0.94)	0.86 ± 0.06 0.86 (0.83/0.90)	-0.03 ± 0.05* -0.04 (-0.06/0.01)	0.021
Calcium (mmol/L)	2.38 ± 0.08 2.38 (2.33/2.43)	2.37 ± 0.09 2.37 (2.31/2.42)	-0.01 ± 0.10 -0.02 (-0.09/0.07)	2.40 ± 0.12 2.39 (2.30/2.51)	2.37 ± 0.10 2.36 (2.29/2.44)	-0.03 ± 0.10* (-0.04 (-0.10/0.02)	0.413

Abbreviations: Δ cortisol; cortisol difference morning-evening; SD, standard deviation; Q1/Q3, first quartile/third quartile; ¹Intention to treat (ITT) population; *p*-Value: **, *p* < 0.001; *, *p* < 0.05 (Wilcoxon test); ^a Mann-Whitney U test; ^b data not available for one participant in the placebo group at baseline (hemolytic blood sample).

Table S5. Changes in serum amino acid concentrations during the dietary intervention

	Verum group (<i>n</i> = 29) ¹			Placebo group (<i>n</i> = 30) ¹			V vs. P <i>p</i> -Value ^a
	Mean ± SD Median (Q1/Q3)			Mean ± SD Median (Q1/Q3)			
	Baseline	Week 12	Difference	Baseline	Week 12	Difference	12 weeks
Protein (g/dL) †	7.15 ± 0.34 7.07 (6.6/8.0)	7.16 ± 0.40 7.08 (6.3/8.2)	0.01 ± 0.36 0.0 (-0.8/0.8)	7.41 ± 0.43 7.44 (6.6/8.6)	7.24 ± 0.44 7.14 (6.4/8.3)	-0.17 ± 0.38* -0.13 (-1.0/0.8)	0.075
L-arginine (μmol/L) †	115.9 ± 27.9 113.0 (97.5/120.5)	122.7 ± 25.4 119.0 (109.0/133.0)	6.8 ± 19.4 8.0 (-6.0/18.5)	132.7 ± 22.8 133.5 (119.2/145.0)	126.3 ± 19.5 123.0 (113.5/142.2)	-6.4 ± 23.1 -8.5 (-19.5/11.5)	0.014
L-ornithine (μmol/L)	106.7 ± 33.0 99.0 (85.5/118.0)	108.4 ± 67.4 103.0 (76.0/117.0)	1.8 ± 52.0 -10.0 (-18.0/11.0)	100.3 ± 21.3 98.5 (84.0/116.0)	100.4 ± 32.5 97.5 (79.8/117.8)	0.1 ± 22.5 -4.0 (-18.0/20.2)	0.590
L-phenylalanine (μmol/L)	95.6 ± 19.8 96.0 (83.5/112.0)	97.5 ± 14.5 96.0 (88.0/109.0)	1.9 ± 17.9 0.0 (-4.5/6.0)	99.6 ± 13.2 97.0 (89.5/109.0)	94.9 ± 15.9 95.0 (83.8/110.0)	-4.6 ± 15.7 -4.5 (-16.2/4.2)	0.090
Taurine (μmol/L)	157.0 ± 35.5 158.0 (126.0/187.5)	175.3 ± 49.5 173.0 (144.0/198.5)	18.3 ± 38.2* 20.0 (-9.0/44.0)	154.6 ± 27.4 155.5 (133.0/168.8)	151.4 ± 43.6 146.0 (123.8/169.5)	-3.2 ± 40.1 1.0 (-31.0/23.5)	0.027
L-Trp (μmol/L)	53.0 ± 14.8 50.0 (43.5/58.5)	53.1 ± 9.3 50.0 (46.0/60.2)	0.1 ± 14.9 3.0 (-3.0/5.0)	54.9 ± 9.4 54.5 (48.0/60.2)	54.6 ± 9.8 54.0 (46.8/58.5)	-0.3 ± 7.8 -1.5 (-5.2/4.2)	0.197
L-tyrosine (μmol/L)	67.5 ± 17.4 67.0 (57.0/78.0)	71.4 ± 21.9 67.0 (62.0/76.0)	3.9 ± 18.6 3.0 (-9.0/10.0)	70.4 ± 13.1 72.0 (65.8/76.8)	69.2 ± 14.7 66.5 (61.0/76.8)	-1.2 ± 19.3 -4.5 (-9.5/2.5)	0.102
L-Trp/CAA	0.087 ± 0.033 0.082 (0.074/0.090)	0.088 ± 0.015 0.086 (0.078/0.096)	0.001 ± 0.033* 0.006 (0.000/0.014)	0.086 ± 0.013 0.082 (0.075/0.096)	0.087 ± 0.015 0.086 (0.076/0.093)	0.001 ± 0.014 0.002 (-0.008/0.011)	0.181
L-Trp/BCAA	0.117 ± 0.040 0.115 (0.104/0.119)	0.122 ± 0.021 0.117 (0.110/0.132)	0.005 ± 0.039* 0.011 (-0.003/0.025)	0.118 ± 0.021 0.112 (0.100/0.134)	0.118 ± 0.022 0.114 (0.099/0.130)	0.000 ± 0.021 0.001 (-0.014/0.014)	0.088

Abbreviations: BCAA, branched-chain amino acids (the sum of L-valine, L-leucine, and L-isoleucine); CAA, competing amino acids (the sum of the BCAA, L-phenylalanine, and L-tyrosine); L-Trp; L-tryptophan; SD, standard deviation; Q1/Q3, first quartile/third quartile; ¹Intention to treat (ITT) population; *p*-Value: **, *p* < 0.001; *, *p* < 0.05 (Wilcoxon test); †, significant group difference at baseline; ^a Mann-Whitney U test.

Table S6. Changes in urinary concentrations during the dietary intervention

	Verum group (<i>n</i> = 29) ¹			Placebo group (<i>n</i> = 30) ¹			V vs. P <i>p</i> -Value ^a
	Mean ± SD Median (Q1/Q3)			Mean ± SD Median (Q1/Q3)			
	Baseline	Week 12	Difference	Baseline	Week 12	Difference	12 weeks
Magnesium (mmol/24 h)	3.38 ± 1.41 3.22 (2.95/4.88)	5.67 ± 1.49 5.49 (4.64/7.10)	1.84 ± 1.56** 1.59 (-1.08/2.97)	3.63 ± 1.27 3.52 (2.56/4.46)	3.84 ± 1.61 3.48 (2.80/4.77)	0.21 ± 1.22 0.44 (-0.30/0.78)	< 0.001
Calcium (mmol/24 h)	4.88 ± 2.36 4.18 (3.33/6.08)	5.60 ± 3.19 5.10 (3.20/6.88)	0.71 ± 2.58* 0.70 (-0.30/1.80)	4.58 ± 3.26 3.39 (2.62/5.97)	4.32 ± 2.93 3.40 (2.47/5.30)	-0.26 ± 1.56 -0.32 (-1.81/0.89)	0.023
Sodium (mmol/24 h)	166.9 ± 66.3 141 .0 (105.5/218.0)	142.0 ± 58.1 137.0 (102.9/172.5)	-24.9 ± 65.9* -20.0 (-80.0/29.5)	157.4 ± 75.7 142.0 (109.4/185.0)	172.0 ± 84.5 147.0 (122.8/217.0)	14.7 ± 82.9 9.5 (-42.6/74.7)	0.025
Chloride (mmol/24 h)	151.9 ± 60.8 135.0 (108.0/202.0)	140.6 ± 56.1 138.0 (109.5/176.0)	-11.3 ± 59.1 -1.0 (-60.0/24.5)	134.3 ± 66.4 126.5 (92.8/162.2)	148.5 ± 76.6 124.5 (107.8/163.8)	14.2 ± 70.3 19.5 (-31.0/67.0)	0.145
pH value	6.22 ± 0.42 6.19 (5.90/6.59)	6.06 ± 0.43 6.03 (5.76/6.39)	-0.16 ± 0.48 -0.11 (-0.51/0.15)	6.16 ± 0.35 6.16 (5.92/6.38)	6.26 ± 0.42 6.24 (5.90/6.60)	0.10 ± 0.44 0.20 (-0.23/0.44)	0.028
Creatinine (g/24h)	1.46 ± 0.53 1.34 (1.11/1.68)	1.37 ± 0.44 1.22 (1.11/1.62)	-0.09 ± 0.34 -0.04 (-0.20/0.08)	1.37 ± 0.52 1.21 (1.00/1.61)	1.37 ± 0.53 1.18 (0.96/1.54)	-0.04 ± 0.30 -0.06 (-0.23/0.09)	0.949
Volume (L/24h)	2.14 ± 0.69 2.00 (1.67/2.59)	2.12 ± 0.73 2.00 (1.64/2.68)	-0.02 ± 0.80 -0.05 (-0.60/0.40)	2.13 ± 0.96 2.15 (1.30/2.92)	2.10 ± 0.85 2.20 (1.49/2.52)	-0.03 ± 0.69 -0.10 (-0.48/0.46)	0.871

Abbreviations: SD, standard deviation; Q1/Q3, first quartile/third quartile; ¹Intention to treat (ITT) population; *p*-Value: **, *p* < 0.001; *, *p* < 0.05 (Wilcoxon test); ^a Mann-Whitney U test.

Table S7. Changes in anthropometric and clinical parameters during the dietary intervention

	Verum group (<i>n</i> = 29) ¹			Placebo group (<i>n</i> = 30) ¹			V vs. P <i>p</i> -Value ^a
	Mean ± SD Median (Q1/Q3)			Mean ± SD Median (Q1/Q3)			
	Baseline	Week 12	Difference	Baseline	Week 12	Difference	12 weeks
Weight (kg)	73.3 ± 13.3 74.6 (60.8/83.9)	73.5 ± 13.3 74.5 (61.6/83.4)	0.2 ± 1.2 0.2 (-0.4/1.0)	76.2 ± 21.4 69.6 (60.6/93.2)	77.1 ± 22.4 69.0 (60.8/93.5)	0.9 ± 2.0* 0.8 (-0.2/1.8)	0.292
Body mass index (BMI, kg/m ²)	25.2 ± 4.4 24.9 (22.1/27.0)	25.3 ± 4.3 25.0 (22.2/27.4)	0.1 ± 0.4 0.1 (-0.2/0.3)	25.9 ± 5.8 24.3 (21.7/29.2)	26.2 ± 6.1 24.1 (21.8/30.4)	0.3 ± 0.6* 0.3 (-0.1/0.7)	0.253
Waist circumference (cm)	90.2 ± 12.5 90.0 (81.5/99.0)	90.3 ± 12.4 91.0 (80.5/99.0)	0.1 ± 1.3 0.0 (-1.0/1.0)	92.1 ± 16.5 88.5 (79.8/104.8)	92.8 ± 16.6 89.0 (80.0/106.0)	0.7 ± 1.8* 0.5 (0.0/1.0)	0.133
Waist-to-height ratio (WHtR)	0.530 ± 0.077 0.543 (0.469/0.560)	0.531 ± 0.076 0.543 (0.469/0.563)	0.001 ± 0.007 0.000 (-0.006/0.006)	0.540 ± 0.085 0.536 (0.481/0.580)	0.543 ± 0.085 0.536 (0.486/0.583)	0.004 ± 0.011* 0.003 (0.000/0.006)	0.120
Systolic blood pressure (mmHg)	113.7 ± 12.6 111.0 (103.7/123.2)	111.0 ± 11.3 109.3 (104.2/119.8)	-2.7 ± 7.2* -2.3 (-6.5/0.0)	111.2 ± 15.8 107.5 (100.8/120.5)	108.6 ± 14.9 106.5 (98.1/120.9)	-2.5 ± 7.3* -3.2 (-7.8/2.4)	0.871
Diastolic blood pressure (mmHg)	75.1 ± 8.2 74.7 (69.2/81.8)	73.8 ± 6.9 74.0 (70.3/77.8)	-1.3 ± 5.1 -1.3 (-4.5/2.3)	75.7 ± 9.0 77.7 (69.5/80.7)	74.5 ± 8.5 73.5 (67.1/82.3)	-1.2 ± 4.7 -0.8 (-5.1/1.8)	0.973
Resting heart rate (1/min)	66.7 ± 9.0 65.7 (60.5/72.5)	65.3 ± 7.4 65.3 (60.2/70.7)	-1.4 ± 6.8 -1.3 (-6.0/1.8)	66.5 ± 8.4 67.0 (61.2/72.0)	67.4 ± 10.0 67.3 (58.9/72.2)	1.0 ± 9.0 -1.2 (-4.4/7.4)	0.495
Resting heart rate (female; V: <i>n</i> =21, P: <i>n</i> =20)	67.8 ± 9.1 66.0 (61.3/73.3)	67.3 ± 6.9 66.0 (63.0/72.7)	-0.5 ± 7.2 0.3 (-3.7/2.0)	66.2 ± 8.4 66.8 (61.2/71.8)	65.2 ± 8.6 67.0 (57.9/71.7)	-1.0 ± 8.4 -2.3 (-6.2/8.2)	0.412
Resting heart rate (male; V: <i>n</i> =8, P: <i>n</i> =10)	64.0 ± 8.8 62.2 (57.7/66.8)	60.2 ± 6.5 60.0 (56.0/64.5)	-3.8 ± 5.0 -4.7 (-6.6/1.3)	67.0 ± 8.9 67.0 (60.1/73.2)	71.9 ± 11.6 69.2 (64.6/77.2)	4.9 ± 9.3 2.8 (-1.0/7.4)	0.011
Pulse pressure (mmHg)	38.6 ± 7.2 39.0 (35.3/42.2)	37.2 ± 6.1 36.3 (33.2/40.2)	-1.4 ± 5.1 -1.0 (-4.3/2.8)	35.5 ± 9.2 33.8 (28.6/40.3)	34.2 ± 8.7 (34.8 (26.5/41.1)	-1.3 ± 5.8 -1.0 (-5.3/2.0)	0.919

Abbreviations: SD, standard deviation; Q1/Q3, first quartile/third quartile; ¹Intention to treat (ITT) population; *p*-Value: **, *p* < 0.001; *, *p* < 0.05 (Wilcoxon test); ^a Mann-Whitney U test.

Table S8. Changes in cardiometabolic parameters during the dietary intervention

	Verum group (<i>n</i> = 29) ¹			Placebo group (<i>n</i> = 30) ¹			V vs. P <i>p</i> -Value ^a
	Mean ± SD Median (Q1/Q3)			Mean ± SD Median (Q1/Q3)			
	Baseline	Week 12	Difference	Baseline	Week 12	Difference	12 weeks
Total cholesterol (TC, mg/dl)	209.9 ± 51.7 204.0 (180.0/228.5)	206.4 ± 47.3 197.0 (174.5/228.5)	-3.4 ± 20.6 -5.0 (-15.5/13.0)	213.1 ± 43.2 211.5 (178.8/247.2)	210.9 ± 45.7 203.5 (189.2/238.5)	-2.2 ± 25.7 -2.0 (-21.2/19.0)	0.931
HDL-C (mg/dl)	64.3 ± 18.6 64.5 (48.5/81.0)	65.8 ± 19.0 64.0 (52.0/80.5)	1.6 ± 7.2 1.3 (-5.0/5.6)	64.4 ± 21.7 61.4 (46.6/75.0)	63.8 ± 23.4 60.4 (48.8/67.9)	-0.6 ± 8.0 0.0 (-8.6/3.8)	0.203
LDL-C (mg/dl)	130.1 ± 48.0 127.0 (94.0/156.0)	125.9 ± 43.4 114.0 (97.5/156.5)	-4.2 ± 18.6 -8.0 (-18.0/8.0)	137.2 ± 35.1 137.0 (108.8/164.8)	132.6 ± 35.8 126.5 (110.5/159.0)	-4.6 ± 21.8 -8.5 (-17.5/9.0)	0.961
Triglycerides (TG, mg/dl)	109.2 ± 64.9 87.0 (71.0/127.5)	109.7 ± 63.7 97.0 (71.0/117.0)	0.5 ± 35.5 5.0 (-11.5/23.0)	92.7 ± 41.8 84.0 (71.2/105.8)	110.7 ± 92.2 81.0 (67.8/114.5)	18.0 ± 75.6 9.0 (-11.8/18.8)	0.606
Fasting plasma glucose (FPG, mg/dl)	88.1 ± 9.3 85.0 (79.0/96.0)	86.2 ± 7.2 88.0 (79.0/90.5)	-1.8 ± 6.2 0.0 (-6.5/2.0)	91.4 ± 22.6 86.5 (79.5/95.0)	94.5 ± 35.0 86.5 (78.8/95.5)	3.1 ± 15.5 0.0 (-4.0/5.8)	0.295
HbA1 _c (glycated hemoglobin A1 _c , %)	5.41 ± 0.29 5.40 (5.25/5.55)	5.41 ± 0.24 5.40 (5.20/5.60)	0.00 ± 0.30 0.00 (-0.20/0.20)	5.63 ± 0.75 5.45 (5.30/5.70)	5.62 ± 0.94 5.35 (5.18/5.72)	-0.01 ± 0.29 0.00 (-0.20/0.20)	0.841
HOMA-Index	1.50 ± 0.84 1.30 (0.85/2.05)	1.50 ± 1.05 1.20 (0.90/1.60)	0.01 ± 0.91 -0.10 (-0.45/0.40)	1.96 ± 2.04 1.35 (1.05/2.10)	2.83 ± 4.89 1.20 (0.95/1.90)	0.87 ± 3.47 -0.10 (-0.52/0.55)	0.859
Insulin-ECLIA(μU/mL)	6.75 ± 3.54 6.03 (3.97/8.42)	7.02 ± 4.71 5.36 (4.19/7.21)	0.27 ± 4.06 -0.47 (-1.92/1.96)	7.83 ± 4.90 6.43 (4.86/8.70)	10.00 ± 13.71 5.51 (4.72/9.42)	2.17 ± 11.49 -0.36 (-2.26/2.56)	0.839

Abbreviations: ECLIA, electrochemiluminescence immunoassay; HDL-C, high-density lipoprotein cholesterol; HOMA-index, homeostasis model assessment index; LDL-C, low-density lipoprotein cholesterol; SD, standard deviation; Q1/Q3, first quartile/third quartile; ¹Intention to treat (ITT) population; *p*-Value: **, *p* < 0.001; *, *p* < 0.05 (Wilcoxon test); ^a Mann-Whitney U test.

Table S9. Changes in further serum parameters during the dietary intervention

	Verum group (<i>n</i> = 29) ¹			Placebo group (<i>n</i> = 30) ¹			V vs. P <i>p</i> -Value ^a
	Mean ± SD Median (Q1/Q3)			Mean ± SD Median (Q1/Q3)			
	Baseline	Week 12	Difference	Baseline	Week 12	Difference	12 weeks
C-reactive protein sensitive (CRP, mg/L)	2.86 ± 3.89 1.40 (0.60/2.45)	2.23 ± 3.23 1.10 (0.50/2.35)	-0.62 ± 3.46 0.00 (-0.75/0.35)	1.65 ± 2.97 0.60 (0.50/1.60)	1.85 ± 2.46 0.90 (0.40/2.55)	0.21 ± 3.48 0.00 (-0.20/0.40)	0.312
Ferritin (ng/mL)	99.2 ± 68.5 78.0 (44.0/152.0)	80.9 ± 81.2 61.0 (33.0/126.0)	-18.3 ± 23.4** -12.0 (-33.0/-2.0)	129.1 ± 135.5 96.0 (40.2/181.8)	145.8 ± 182.0 71.0 (35.8/180.2)	16.7 ± 107.0 -2.5 (-13.5/15.0)	0.011
Gamma-glutamyltransferase (GGT, U/L)	21.7 ± 14.8 15.0 (11.0/27.5)	23.7 ± 20.2 16.0 (12.0/27.0)	1.9 ± 13.0 1.0 (-1.5/3.0)	22.8 ± 12.2 20.0 (12.0/32.0)	24.4 ± 20.9 16.0 (11.8/31.2)	1.6 ± 18.1 -1.0 (-4.0/2.0)	0.088
Aspartate aminotransferase (ASAT, U/L)	27.0 ± 17.6 24.0 (20.0/28.0)	26.3 ± 5.9 27.0 (22.5/29.5)	-0.8 ± 14.7 1.0 (-1.0/4.0)	23.5 ± 4.7 23.5 (21.0/27.0)	35.5 ± 66.0 22.0 (19.0/28.0)	12.0 ± 66.3 0.0 (-3.0/2.0)	0.126
Alanine aminotransferase (ALAT, U/L)	23.9 ± 12.4 22.0 (16.5/27.0)	27.3 ± 15.4 22.0 (19.0/31.5)	3.4 ± 8.1* 3.0 (-1.0/8.0)	23.3 ± 12.1 20.5 (13.8/29.2)	52.7 ± 162.5 18.5 (14.8/29.8)	29.4 ± 163.4 -0.5 (-4.0/3.2)	0.047
GFR (CKD-EPI) (mL/min)	96.2 ± 16.3 94.0 (83.5/106.5)	97.3 ± 15.0 99.0 (85.5/107.5)	1.1 ± 5.8 1.0 (-3.0/5.5)	95.8 ± 13.1 95.5 (85.5/104.5)	97.7 ± 14.2 98.5 (85.8/107.5)	1.8 ± 8.0 1.0 (-4.0/7.2)	0.830

Abbreviations: GFR (CKD-EPI), glomerular filtration rate (Chronic Kidney Disease Epidemiology Collaboration); SD, standard deviation; Q1/Q3, first quartile/third quartile; ¹Intention to treat (ITT) population; *p*-Value: **, *p* < 0.001; *, *p* < 0.05 (Wilcoxon test); ^a Mann-Whitney U test.