

Supplementary Materials

Table S1. Compliance test results

Time	Test group	Placebo group	Total
Week 4	93.89±6.27	96.97±5.69	95.45±6.14
Week 8	93.53±7.09	98.23±5.67	95.91±6.79

Values are presented as mean ± standard deviation.

Table S2. Intake of major nutrients and minerals in the Test and placebo groups

Variables	Time Point	Test group	Placebo group	Total	<i>p</i> -value ¹⁾
Energy (kcal)	Baseline	1634.99±392.89	1638.85±564.88	1636.94±484.46	0.972
	Week 4	1813.14±656.72	1742.33±573.72	1777.73±613.53	0.618
	Week 8	1764.20±680.26	1658.16±457.93	1710.49±577.05	0.427
Carbohydrates (g)	Baseline	215.18±67.93	219.95±87.97	217.60±78.24	0.791
	Week 4	213.65±78.88	219.91±88.40	216.78±83.27	0.746
	Week 8	200.53±71.56	212.16±68.01	206.42±69.57	0.467
Lipids (g)	Baseline	54.38±21.69	51.91±21.30	53.13±21.39	0.616
	Week 4	60.03±33.65	57.62±29.08	58.82±31.26	0.738
	Week 8	61.20±41.62	54.19±20.03	57.65±32.50	0.352
Protein (g)	Baseline	64.56±23.01	61.91±22.24	63.22±22.51	0.609
	Week 4	75.22±28.36	72.50±27.05	73.86±27.56	0.670
	Week 8	78.87±32.56	68.37±26.91	73.55±30.10	0.127
Iron (g)	Baseline	12.35±4.20	17.53±16.65	14.97±12.41	0.067
	Week 4	14.33±7.19	14.44±7.95	14.39±7.53	0.948
	Week 8	13.33±6.48	15.70±14.79	14.53±11.46	0.365
Zinc (mg)	Baseline	8.75±3.05	8.10±2.95	8.42±3.00	0.345
	Week 4	10.81±5.62	10.63±5.62	10.72±5.58	0.892
	Week 8	10.29±4.77	9.51±4.44	9.90±4.60	0.460

Values are presented as mean ± standard deviation. ¹⁾ Analyzed by independent t-test.

Table S3. Physical activity results

Variables	Time Point	Test group	Placebo group	<i>p</i> -value ¹⁾
MET (Min/Week)	0 week	2758.24±4211.91	1952.63±2523.83	0.336
	8 week	2672.57±3428.40	2230.56±2259.82	0.525
	<i>p</i> -value ²⁾	0.887	0.474	
Work and household activities	0 week	2295.00±5026.81	1260.00±1514.31	0.392
	8 week	1795.56±2852.74	1060.95±1493.97	0.310
	<i>p</i> -value ²⁾	0.412	0.792	
Walking and biking to get around	0 week	784.62±540.08	811.43±700.72	0.876
	8 week	1091.33±1319.24	970.30±1025.16	0.684
	<i>p</i> -value ²⁾	0.132	0.437	
Leisure time activities	0 week	1056.92±866.01	1160.00±1267.54	0.732
	8 week	1095.38±716.44	1040.00±776.92	0.792
	<i>p</i> -value ²⁾	0.728	0.382	
Sitting activities (hour/day)	0 week	5.89±3.44	5.85±3.48	0.951
	8 week	6.34±3.68	5.47±3.37	0.286
	<i>p</i> -value ²⁾	0.352	0.488	

MET, metabolic equivalent of task. Values are presented as mean ± standard deviation. ¹⁾ Analyzed by independent t-test. ²⁾ Analyzed by paired t-test

Table S4. Cytokine assay results

	Time Point	Test group	Placebo group	Total	<i>p</i> -value ¹⁾
TNF- α (pg/mL)	Baseline	7.03 \pm 3.18	7.65 \pm 3.78	7.34 \pm 3.49	0.470
	Week 4	6.74 \pm 3.83	7.47 \pm 3.57	7.11 \pm 3.69	0.348
	Week 8	7.06 \pm 3.76	7.87 \pm 3.86	7.47 \pm 3.81	0.284
IFN- γ (IU/mL)	Baseline	6.30 \pm 6.08	7.25 \pm 16.22	6.78 \pm 12.24	0.447
	Week 4	6.19 \pm 5.80	14.60 \pm 46.87	10.45 \pm 33.66	0.258
	Week 8	6.46 \pm 5.72	9.57 \pm 29.10	8.04 \pm 21.02	0.261
IL-6 (pg/mL)	Baseline	11.39 \pm 18.72	5.51 \pm 10.69	8.41 \pm 15.38	0.168
	Week 4	10.75 \pm 17.34	6.57 \pm 12.60	8.63 \pm 15.18	0.353
	Week 8	11.07 \pm 17.48	7.40 \pm 16.64	9.21 \pm 17.05	0.529

Table S5. Safety outcome measured by diagnostic laboratory test

Variables	Test group	Placebo group	Total	<i>p</i> -value ¹⁾
WBC ($\times 10^3/\text{mm}^3$)	5.42 \pm 1.05	5.15 \pm 1.16	5.29 \pm 1.11	0.288
RBC ($\times 10^6/\text{mm}^3$)	4.62 \pm 0.35	4.39 \pm 0.43	4.50 \pm 0.40	0.012
Hemoglobin (g/dL)	13.84 \pm 1.28	13.35 \pm 1.24	13.60 \pm 1.28	0.083
Hematocrit (%)	41.85 \pm 3.36	40.09 \pm 3.40	40.97 \pm 3.48	0.022
Platelet ($\times 10^3/\text{mm}^3$)	272.38 \pm 63.03	258.43 \pm 52.17	265.40 \pm 57.91	0.284
Total protein (g/dL)	7.54 \pm 0.29	7.42 \pm 0.49	7.48 \pm 0.40	0.196
Albumin (g/dL)	4.98 \pm 0.27	4.86 \pm 0.24	4.92 \pm 0.26	0.039
Glucose (mg/dL)	96.65 \pm 10.61	93.48 \pm 8.48	95.06 \pm 9.67	0.143
Total bilirubin (mg/dL)	0.58 \pm 0.31	0.52 \pm 0.37	0.55 \pm 0.34	0.434
AST (IU/L)	22.00 \pm 6.30	21.45 \pm 7.46	21.73 \pm 6.87	0.723
ALT (IU/L)	16.48 \pm 8.69	15.48 \pm 11.62	15.98 \pm 10.20	0.664
CK (IU/L)	140.55 \pm 221.04	113.28 \pm 60.74	126.91 \pm 161.65	0.456
ALP (IU/L)	56.45 \pm 14.14	51.78 \pm 14.83	54.11 \pm 14.59	0.153
Gamma-GT (IU/L)	26.05 \pm 31.44	23.05 \pm 35.22	24.55 \pm 33.21	0.689
BUN (mg/dL)	13.43 \pm 4.02	12.22 \pm 3.40	12.82 \pm 3.75	0.149
Creatinine (mg/dL)	0.76 \pm 0.17	0.73 \pm 0.16	0.74 \pm 0.16	0.310

Values are presented as mean \pm standard deviation. ¹⁾ Analyzed by independent t-test