Supplementary Table 1. Nutrient analysis of freeze-dried table grape powder and control powder

Nutrient	Grape powder (per 46g)	Control powder (per 46g)
Calories (kcals)	165.6	169.2
Total Fatty Acids (g)	0.4	0.00817
Total Carbohydrate (g)(sugars)	37.72	32.75
Protein (g)	0.27	0.12
Calcium (mg)	27.02	10.12
Copper (mg)	0.19	<0.022
Iron (mg)	0.82	0.18
Magnesium (mg)	16.9	1.06
Manganese (mg)	0.21	0.03
Phosphorus (mg)	46	54.83
Potassium (mg)	474.8	268.75
Sodium (mg)	14.9	28
Zinc (mg)	0.11	0.024
Thiamin (mg)	0.08	<0.004
Folic Acid (mcg)	7.15	<2.8
Ash (g)	1.52	0.96
Moisture (g)	2.71	2.53

Supplementary Table 2: Polyphenol content of freeze-dried grape powder

Compounds	Amount (mg/kg)
Total Polyphenols (GAE)	3540
Catechins	17
Catechin	14.6 ± 0.718
Epicatechin	2.43 ± 0.120
Anthocyanins	9.82
Peonidin	2.62 ± 0.152
Cyanidin	0.24 ± 0.013
Malvidin	6.96 ± 0.298
Flavonols	
Kaempferol	0.139 ± 0.018
Isorhamnetin	0.148 ± 0.016
Quercetin	1.58 ± 0.086
Stilbenes	
Resveratrol (mg/kg)	0.33 ± 0.061

GAE, gallic acid equivalents.

Supplemental Table 3. Estimated percentage changes of the primary interested outcomes from baseline to 3 weeks for each group, based on random intercept gamma models.

Outcome	Grape		Control	
	Estimate (95% CI)	**P-value**	**Estimate (95% CI)**	**P-value**
Estimated percentage change from Baseline to Week 3 for a 70-year old participant (%)				
Average Grip Strength Value	**14.63 (6.60, 23.26)**	**0.004**	2.52 (-4.20, 9.72)	0.488
Gait Speed Test	-6.73 (-16.78, 4.54)	0.259	-3.58 (-13.28, 7.21)	0.516
Chair Stand Test	**15.90 (4.09, 29.05)**	**0.023**	-2.74 (-11.99, 7.49)	0.598
Irisin Level	-10.9 (-23.92, 4.26)	0.180	**-21.2 (-32.49, -8.03)**	**0.013**

Abbreviations: CI = Confidence Interval
The results were based on gamma mixed-effects models with log link that included fixed effects of age (centered at 70 years), group (Grape; Control), time at testing (3, 6 weeks), the interaction between group and time, an offset term of log baseline outcome at Week 0, and a random intercept to account for within-subject correlation. For Average Grip Strength Value and Irisin Levels, the interaction was removed due to non-significance. The estimated percentage changes in the outcomes were calculated by (ratios of Week 3 (or 6) to Baseline means) - 1, where the ratios were estimated by exponentiating the linear predictors (excluding the offset) in the fitted models for a 70-year-old participant.

Supplemental Table 4. Plasma levels of kidney and liver function parameters over six weeks of dietary intervention with grape powder or control

Variables	Grape			Control			p-value		
	Baseline	**Week 3**	**Week 6**	**Baseline**	**Week 3**	**Week 6**	**t**	**I**	**t x I**
Kidney function									
BUN (mg/dl)	13.5 ± 3.7	12.7 ± 3.7	13.5 ± 3.9	14.4 ± 6.1	14.0 ± 7.5	13.7 ± 4.5	0.70	0.77	0.75
Creatinine (mg/dl)	0.8 ± 0.0	0.8 ± 0.1	0.8 ± 0.1	0.8 ± 0.1	0.8 ± 0.1	0.8 ± 0.1	0.86	0.35	0.86
Sodium (mmol/l)	140.3 ± 2.4	140.8 ± 3.8	141.0 ± 2.2	138.6 ± 4.4	140.7 ± 1.7	141.6 ± 2.6	0.23	0.71	0.54
Potassium (mmol/l)	4.3 ± 1.7	4.6 ± 0.4	4.9 ± 0.8	4.8 ± 0.5	5.0 ± 0.6	4.8 ± 0.6	0.52	0.37	0.55
Chloride (mmol/l)	104.0 ± 2.3	104.3 ± 2.1	103.8 ± 1.9	103.7 ± 2.6	104.2 ± 1.6	104.0 ± 3.0	0.83	0.92	0.94
Calcium (mmol/l)	9.3 ± 0.2	9.3 ± 0.2	9.4 ± 0.3	9.2 ± 0.3	9.4 ± 0.2	9.2 ± 0.4	0.91	0.77	0.36
Liver function									
Bilirubin (mg/dl)	0.5 ± 0.1	0.4 ± 0.1	0.5 ± 0.1	0.5 ± 0.1	0.5 ± 0.1	0.5 ± 0.1	0.34	0.83	0.39
Albumin (g/dl)	4.2 ± 0.1	4.2 ± 0.1	4.2 ± 0.1	4.5 ± 0.3	4.4 ± 0.2	4.4 ± 0.2	0.26	0.07	0.35
ALP (U/L)	77.8 ± 12.4	78.5 ± 11.1	80.5 ± 13.0	71.1 ± 8.9	71.6 ± 8.8	70.3 ± 6.9	0.86	0.17	0.49
AST (U/L)	23.7 ± 5.6	26.5 ± 9.2	24.7 ± 5.6	22.4 ± 4.1	24.6 ± 2.8	27.1 ± 6.6	0.26	0.93	0.45
ALT (U/L)	15.3 ± 5.5	16.7 ± 7.8	15.5 ± 2.6	17.3 ± 6.5	17.7 ± 5.2	20.7 ± 12.1	0.56	0.46	0.47

BUN, Blood Urea Nitrogen; ALP, Alkaline phosphatase; AST, Aspartate aminotransferase; ALT, Alanine aminotransferase; t, effect of time; I, effect of dietary intervention, txI, interaction, from repeated measure mixed analysis ANOVA. Data presented as Mean ± Standard deviation.

Supplemental Table 5. Hematological parameters in postmenopausal women over six weeks of dietary intervention with

Variables	Grape			Control			p-value		
	Baseline	**Week 3**	**Week 6**	**Baseline**	**Week 3**	**Week 6**	**t**	**I**	**t x I**
RBC (million/mm3)	4.2 ± 0.1	4.1 ± 0.1	4.2 ± 0.1	4.2 ± 0.3	4.2 ± 0.2	4.3 ± 0.2	0.11	0.33	0.51
WBC (million/mm3)	5.6 ± 1.4	3.8 ± 1.8	5.1 ± 1.5	4.4 ± 0.7	4.5 ± 0.9	4.2 ± 0.9	0.19	0.42	0.08
Hematocrit (%)	38.2 ± 1.5	37.0 ± 2.1	38.0 ± 1.9	38.3 ± 2.7	37.6 ± 2.2	38.9 ± 1.5	0.05	0.67	0.57
Hemoglobin (g/dl)	13.0 ± 0.6	12.5 ± 0.9	13.0 ± 0.7	12.7 ± 1.1	12.6 ± 0.6	13.0 ± 0.5	0.03	0.85	0.38
MCV (fl)	90.8 ± 4.3	89.9 ± 3.9	91.2 ± 5.1	90.2 ± 3.6	90.0 ± 3.9	90.2 ± 3.9	0.58	0.72	0.67
MCH (pg)	30.8 ± 1.8	30.4 ± 1.7	31.1 ± 2.0	29.9 ± 1.5	30.2 ± 1.8	30.3 ± 1.7	0.13	0.44	0.85
MCHC (%)	33.9 ± 0.6	33.7 ± 0.8	34.1 ± 0.7	33.1 ± 0.5	33.6 ± 0.9	33.5 ± 0.5	0.30	0.15	0.50

grape powder or control.

RBC, Red blood cells, WBC, White blood cells; MCV, Mean corpuscular volume; MCH, Mean corpuscular hemoglobin; MCHC, Mean corpuscular hemoglobin concentration; p-values for the effect of time (t); effect of supplementation (I), and their interaction (txI), from repeated measure mixed analysis ANOVA. Data presented as Mean ± Standard deviation.