Table S1. Regression Models of Diet (vegans/omnivores) on BUA

	Adjustment	β-coefficient	p-value
Model 1	-	6.16	0.02
Model 2	Lifestyle factors	7.05	0.006
Model 3	Biomarker pattern score	1.89	0.41
Model 4	Biomarker pattern score + Lifestyle factors	3.49	0.19

The Regression models used the diet group as predictive variable coded as 0 for vegans and 1 for omnivores. Model 1: unadjusted; Model 2: adjustment of lifestyle factors (age, sex, education, smoking status, BMI, physical activity, alcohol consumption); Model 3: Biomarker pattern score was detected by Reduced Rank Regression (RRR). Model 4: biomarker pattern score and additionally adjustment of lifestyle factors

Table S2. Characteristics of all predictor variables included in the RRR (including those in Table 3) according to the tertiles of the first biomarker pattern score

	T1 (n=23)	T2 (n=24)	T3 (n=23)	p for trend
Vegans/Omnivores	16/7	14/10	6/17	0.009
Duration vegan diet (years)	3.5 (3.1-6.0)	4.9 (2.3-6.3)	8.2 (4.2-12.2)	0.27
Men	39.1% (9)	50.0% (12)	56.5% (13)	0.49
Age (years)	40.0 (35.0-47.0)	36.0 (31.0-44.5)	35.0 (31.0-44.0)	0.09
BMI (kg/m^2)	22.4 ± 2.5	24.0 ± 3.1	23.7 ± 2.5	0.13
Physical Activity (h/week)	1.50 (0.67-3.54)	2.42 (1.07-3.44)	2.67 (1.75-4.33)	0.01
Smoker	26.1% (6)	16.7% (4)	13.0% (3)	0.17
Alcohol consumption (g/d)				
Women	0.27 (0.01-9.90)	0.10 (0.01-2.50)	0.13 (0.02-1.51)	0.16
Men	2.00 (0.21-19.8)	0.03 (0.00-1.99)	1.16 (0.00-4.40)	0.42
Quantitative ultrasound				
BUA (dB/MHz)	108.8 ± 10.8	113.2 ± 9.06	122.4 ± 9.37	<0.0001
SOS (m/s)	1569.1 ± 27.4	1581.5 ± 28.2	1611.7 ± 33.4	<0.0001
SI	91.8 ± 12.9	98.1 ± 12.1	112.7 ± 14.3	<0.0001
Bone turnover				
CTX (ng/ml)	0.46 ± 0.20	0.42 ± 0.20	0.36 ± 0.13	0.08
Osteocalcin (ng/ml)	21.4 ± 7.09	19.1 ± 5.79	18.1 ± 5.99	0.08
PINP [µg/l]	60.7 ± 17.4	58.8 ± 17.3	52.1 ± 18.5	0.10
Alkaline phosphatase (U/l)	65.0 (58.0-80.0)	59.0 (51.5-77.0)	63.0 (48.0-81.0)	0.30
Calcium homeostasis				
PTH (pg/ml)	49.6 ± 20.6	45.6 ± 23.1	48.1 ± 17.8	0.80

Vitamin D3 (nmol/l)	53.7 (23.1-88.1)	70.7 (37.4-91.4)	40.7 (33.6-68.0)	*0.96*
Urinary calcium (mg/l)	60.0 (39.0-82.0)	55.5 (40.0-103.5)	82.0 (50.0-167.0)	*0.20*
FGF23-α-klotho-axis				
α-klotho (pg/ml)	666.4 (515.8-865.9)	652.5 (557.8-807.4)	763.0 (689.6-860.4)	*0.21*
FGF23 (RU/ml)	73.7 (58.9-91.3)	62.6 (57.7-70.9)	63.9 (50.3-78.0)	*0.04*
Vitamin B12 Status				
4cB12	0.36 (-0.10-0.70)	0.71 (0.28-1.24)	0.42 (0.17-0.70)	*0.16*
Vitamins				
Vitamin A (µmol/l)	1.77 (1.53-1.95)	1.91 (1.61-2.21)	2.04 (1.79-2.31)	*0.003*
Vitamin B2 (nmol/l)	6.46 (4.76-9.86)	10.2 (5.73-14.5)	6.76 (4.24-9.95)	*0.87*
Vitamin B6 (nmol/l)	60.0 (44.1-84.1)	72.3 (46.4-95.0)	84.4 (53.3-126.0)	*0.01*
Vitamin K1 (nmol/l)	1.48 (0.83-1.84)	1.33 (0.82-1.55)	0.87 (0.50-1.67)	*0.05*
Folate (ng/ml)	9.31 (6.54-11.9)	10.9 (7.88-13.4)	7.55 (6.17-11.4)	*0.32*
Amino acids				
Alanine (µmol/l)	385.4 ± 106.6	355.2 ± 84.5	348.7 ± 51.8	*0.14*
Arginine (µmol/l)	64.9 (50.9-69.5)	63.8 (53.5-71.7)	71.2 (60.1-79.5)	*0.15*
Glutamine (µmol/l)	623.1 ± 77.2	570.2 ± 86.4	572.0 ± 86.5	*0.04*
Leucine (µmol/l)	117.7 (106.5-136.8)	118.2 (106.7-137.6)	118.9 (111.7-152.8)	*0.14*
Lysine (µmol/l)	129.7 (113.9-155.8)	146.3 (128.4-165.8)	166.1 (146.3-187.5)	*0.0002*
Proline (µmol/l)	172.7 (139.9-212.9)	158.4 (129.8-180.9)	191.7 (160.6-246.5)	*0.55*
Iodine and thyroid				
Urinary iodine (µg/l)	26.7 (14.8-53.3)	44.6 (29.7-63.2)	70.7 (34.1-103.6)	*0.002*
TSH (µg/l)	1.75 ± 0.81	2.38 ± 1.12	2.64 ± 0.83	*0.002*
Other bone related biomarker				
Zinc (µg/dl)	79.1 ± 11.4	81.8 ± 10.7	87.5 ± 14.7	*0.02*

SePP (mg/l)	3.37 (2.32-4.77)	3.82 (3.07-5.25)	5.08 (4.15-5.32)	*0.0004*
hsCRP (mg/l)	0.47 (0.24-1.98)	0.62 (0.25-1.08)	0.44 (0.17-0.75)	*0.39*
Total n-3 fatty acids (%)	3.45 (2.79-4.32)	3.98 (3.02-4.93)	4.36 (3.68-5.65)	*0.03*
Urinary magnesium (mg/l)	50.2 (44.0-59.0)	59.1 (43.3-93.0)	59.1 (46.6-74.3)	*0.19*

Variables expressed as a percentage or mean ± SD or median (IQR), BMI (body mass index), BUA (ultrasound attenuation), SOS (speed of sound), SI (stiffness index), CTX (b-CrossLaps), PINP (procollagen type-1), PTH (parathyroid hormone), FGF23 (fibroblast growth factor 23), 4cB12 (4 markers combined vitamin B12 indicator), TSH (thyroid-stimulating hormone), SePP (selenoprotein P), hsCRP (high-sensitivity C-reactive protein)