

# **The associations between oxidative balance score and serum Klotho level in the U.S. population aged 40-79 years**

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**Supplementary Table 1. MET scores of physical activities.**

	MET score		
	0	4	8
Work activity <sup>+</sup>	No	Moderate	Vigorous
Transportation modes	others	Walking or bicycling	
Recreational activities <sup>++</sup>	No	Moderate	Vigorous

Abbreviations: MET, metabolic equivalent of task;

<sup>+</sup> including carrying or lifting loads, digging or construction work and so on;

<sup>++</sup> including bicycling, swimming, volleyball, running, basketball and so on.

**Supplementary Table 2. Ingredients that make up the oxidative balance score.**

OBS components	Property	Male			Female		
		0	1	2	0	1	2
<b>Dietary OBS components</b>							
Dietary fiber (g/d)	A	<14.10	14.10-22.10	≥22.10	<12.10	12.10-18.25	≥18.25
Carotene (RE/d)	A	<61.49	61.49-203.32	≥203.32	<69.31	69.31-229.75	≥229.75
Riboflavin (mg/d)	A	<1.79	1.79-2.58	≥2.58	<1.42	1.42-2.01	≥2.01
Niacin (mg/d)	A	<22.28	22.28-31.45	≥31.45	<16.10	16.10-22.83	≥22.83
Vitamin B6 (mg/d)	A	<1.76	1.76-2.54	≥2.54	<1.32	1.32-1.92	≥1.92
Total folate (mcg/d)	A	<330.83	330.83-498.00	≥498.00	<264.00	264.00-385.17	≥385.17
Vitamin B12 (mcg/d)	A	<3.57	3.57-6.08	≥6.08	<2.62	2.62-4.36	≥4.36
Vitamin C (mg/d)	A	<45.33	45.33-103.22	≥103.22	<44.90	44.90-99.05	≥99.05
Vitamin E (ATE) (mg/d)	A	<6.15	6.15-9.63	≥9.63	<5.15	5.15-8.17	≥8.17
Calcium (mg/d)	A	<732.83	732.83-1091.50	≥1091.50	<616.00	616.00-921.83	≥921.83
Magnesium (mg/d)	A	<266.50	266.50-369.50	≥369.50	<218.83	218.83-301.00	≥301.00
Zinc (mg/d)	A	<9.75	9.75-14.12	≥14.12	<7.37	7.37-10.35	≥10.35
Copper (mg/d)	A	<1.07	1.07-1.52	≥1.52	<0.90	0.90-1.26	≥1.26
Selenium (mcg/d)	A	<101.30	101.30-141.10	≥141.10	<74.13	74.13-105.05	≥105.05
Total fat (g/d)	P	≥98.84	66.72-98.84	<66.72	≥73.80	50.24-73.80	<50.24
Iron (mg/d)	P	≥18.15	12.64-18.15	<12.64	≥14.01	9.76-14.01	<9.76
<b>Lifestyle OBS components</b>							
Physical activity (MET-minute/wk)	A	<1200.00	1200.00-4453.00	≥4453.00	<800.00	800.00-2520.00	≥2520.00
Alcohol (g/d)	P	≥4.00	2.00-4.00	<2.00	≥2.00	1.00-2.00	<1.00
Body mass index (kg/m <sup>2</sup> )	P	≥30.39	26.40-30.39	<26.40	≥31.60	25.80-31.60	<25.80
Cotinine (ng/ml)	P	≥0.23	0.02-0.23	<0.02	≥0.06	0.01-0.06	<0.01

A stood for the antioxidant, P for the pro-oxidant, RE for the retinal equivalent, ATE for the alpha-tocopherol equivalent, and MET for the metabolic equivalent.

**Supplementary Table 3. Association with serum klotho after exclusion of each one of 20 components from OBS by one at a time.**

	Tertiles of OBS			Continuous (per 1 score increase)
	T1	T2	T3	
OBS excluding dietary fiber	ref	18.84(-2.70, 40.38)	31.05(5.52, 56.58)	2.95(1.02, 4.88)
OBS excluding carotene	ref	17.09(-2.43, 36.61)	32.61(6.51, 58.70)	2.92(1.00, 4.83)
OBS excluding riboflavin	ref	20.96(0.12, 41.81)	42.72(14.95, 70.49)	3.11(1.17, 5.06)
OBS excluding niacin	ref	16.22(-4.47, 36.90)	36.58(9.05, 64.11)	3.10(1.15, 5.04)
OBS excluding vitamin b6	ref	21.35(1.47, 41.23)	38.66(11.24, 66.07)	3.23(1.26, 5.19)
OBS excluding total folate	ref	17.61(-3.02, 38.24)	31.23(3.67, 58.79)	3.14(1.18, 5.10)
OBS excluding vitamin b12	ref	20.73(1.22, 40.24)	39.80(12.59, 67.00)	3.20(1.29, 5.11)
OBS excluding vitamin c	ref	17.58(-1.09, 36.24)	23.94(2.93, 50.81)	3.00(1.08, 4.92)
OBS excluding vitamin e	ref	24.19(2.74, 45.64)	35.32(7.94, 62.71)	3.27(1.30, 5.24)
OBS excluding calcium	ref	14.45(-6.21, 35.12)	31.90(5.69, 58.10)	2.92(0.99, 4.86)
OBS excluding magnesium	ref	21.64(-0.11, 43.39)	40.19(11.90, 68.48)	3.38(1.39, 5.36)
OBS excluding zinc	ref	20.43(-0.11, 40.97)	36.08(7.79, 64.37)	3.07(1.11, 5.04)
OBS excluding copper	ref	19.20(-1.22, 39.62)	32.29(6.72, 57.87)	3.14(1.21, 5.08)
OBS excluding selenium	ref	23.64(2.13, 45.15)	38.21(10.44, 65.99)	3.05(1.17, 4.94)
OBS excluding total fat	ref	10.57(-10.44, 31.58)	29.95(1.90, 58.00)	2.69(0.92, 4.47)
OBS excluding iron	ref	15.00(-5.22, 35.22)	37.25(8.10, 66.39)	2.79(1.06, 4.52)
OBS excluding PA	ref	19.33(-0.94, 39.59)	40.10(13.29, 66.92)	2.93(1.03, 4.83)
OBS excluding alcohol	ref	3.92(-18.80, 26.65)	23.76(4.50, 52.02)	2.12(0.30, 3.95)
OBS excluding BMI	ref	14.94(-6.42, 36.29)	29.93(2.99, 56.86)	2.51(0.68, 4.34)
OBS excluding cotinine	ref	18.23(-1.98, 38.44)	29.32(2.28, 56.36)	2.74(0.80, 4.68)

The model adjusted for age (continuous, years) and sex (female and male), race (White, Black, Hispanic, Mexican American and others), marital status (cohabiting and single), education status (less than high school, high school and more than high school), and poverty income ratio (continuous), daily energy intake (continuous, kcal/d), whole grain (continuous, g/d), milk (continuous, cup/d), red meat (continuous, oz/d), cured meat (continuous, oz/d) and egg intake (continuous, oz/d).

Abbreviation: OBS, oxidative balance score; PA, physical activity; BMI, body mass index.

**Supplementary Table 4. Association between oxidative balance score and serum klotho levels using alternative models of adjustment.**

	Tertiles of OBS			Continuous (per 1 score increase)
	T1	T2	T3	
<b>Model 3</b>	reference	15.57(-5.75, 36.90)	30.35(3.43, 57.28)	2.85(1.03, 4.68)
<b>Model 3b</b>	reference	15.33(-5.92, 36.59)	28.88(2.04, 55.71)	2.74(0.93, 4.55)
<b>Model 3c</b>	reference	25.14(-0.68, 50.96)	36.22(3.57, 68.87)	3.54(1.32, 5.76)
<b>Model 3d</b>	reference	37.00(3.95, 70.04)	34.10(4.08, 68.69)	3.31(1.02, 5.60)

Model 3(original model) adjusted for age (continuous, years) and sex (female and male), race (White, Black, Hispanic, Mexican American and others), marital status (cohabiting and single), education status (less than high school, high school and more than high school), and poverty income ratio (continuous), daily energy intake (continuous, kcal/d), whole grain (continuous, g/d), milk (continuous, cup/d), red meat (continuous, oz/d), cured meat (continuous, oz/d) and egg intake (continuous, oz/d).

Model 3b: Model 3 + diabetes, hypertension and hyperlipidemia (yes or no).

Model 3c excluded participants with extreme energy intake (< 1000 and > 5000 kcal/d).

Model 3d excluded participants with chronic diseases (including diabetes and hypertension).

**Supplemental Table 5. Association between oxidative balance score and serum klotho levels after retrieving participants with fewer missing items of OBS ( $\leq 5$  items).**

	Tertiles of OBS			Continuous (per 0.1 score increase)
	T1	T2	T3	
<b>Participants</b>	4,086	3,732	3,789	
<b><math>\beta</math> (95%CI)</b>				
<b>Model 1</b>	reference	3.59(-16.19, 23.37)	24.33(3.12, 45.53)*	3.6( 1.15, 6.04)*
<b>Model 2</b>	reference	16.45(-7.64, 40.54)	47.27(20.32, 74.21)***	7.48( 3.82,11.14)***
<b>Model 3</b>	reference	8.34(-16.27,32.94)	29.55( 0.53,58.57)*	5.23( 1.23, 9.22)*

In this analysis, we retrieved participants with fewer missing items of OBS ( $\leq 5$  items). Participants with 1-5 missing items of OBS were retrieved by adjusting the number of items in OBS calculations. For example, if a participant had 5 missing items of OBS, His OBS was calculated by the sum of all item scores divided by 15.

Model 1: age (continuous, years) and sex (female and male).

Model 2: Model 1 + race (White, Black, Hispanic, Mexican American and others), marital status (cohabiting and single), education status (less than high school, high school and more than high school), poverty income ratio (continuous) and daily energy intake (continuous, kcal/d).

Model 3: Model 2 + whole grain (continuous, g/d), milk (continuous, cup/d), red meat (continuous, oz/d), cured meat (continuous, oz/d) and egg intake (continuous, oz/d).

Abbreviations: OBS, oxidative balance score; CI, confidence interval.

\* $P < 0.05$ ; \*\* $P < 0.01$ ; \*\*\* $P < 0.001$ .