

Table S1. Energy and nutrient intake in MHO and MUO (Population 1).

Dietary Intake	MHO <i>n</i> = 429	MUO <i>n</i> = 429	<i>p</i> -Value
Energy and macronutrient intake			
Energy intake (kcal)	1966.41 ± 36.73	1883.60 ± 34.74	0.103
Carbohydrates (%) ¹	41.23 ± 0.62	40.73 ± 0.59	0.570
Proteins (%) ¹	17.65 ± 0.28	17.88 ± 0.27	0.556
Lipids (%) ¹	41.96 ± 0.57	42.38 ± 0.54	0.590
SFA (%) ¹	10.42 ± 0.23	10.67 ± 0.22	0.435
MUFA (%) ¹	19.29 ± 0.35	19.03 ± 0.34	0.592
PUFA (%) ¹	4.56 ± 0.09	4.61 ± 0.09	0.732
Cholesterol (mg)	270.02 ± 11.09	278.42 ± 10.47	0.583
Fibre (g)	16.76 ± 0.53	16.05 ± 0.50	0.327
Micronutrient intake			
Calcium (mg)	767.44 ± 22.13	721.88 ± 20.76	0.135
Iron (mg)	13.20 ± 0.28	13.15 ± 0.26	0.903
Iodine (mg)	180.18 ± 7.84	156.02 ± 7.37	0.026
Zinc (mg)	8.51 ± 0.23	8.50 ± 0.21	0.995
Magnesium (mg)	250.81 ± 4.74	239.90 ± 4.44	0.094
Potassium (mg)	2996.22 ± 65.05	2814.29 ± 59.83	0.041
Thiamine (B1) (mg)	1.46 ± 0.04	1.48 ± 0.04	0.677
Riboflavin (B2) (mg)	1.54 ± 0.05	1.46 ± 0.00	0.259
Niacin (B3) (mg)	27.75 ± 0.64	26.93 ± 0.60	0.354
Pyridoxine (B6) (mg)	1.88 ± 0.04	1.78 ± 0.04	0.06
Folic acid (B9) (mg)	208.57 ± 7.14	198.32 ± 6.69	0.297
Cobalamin (B12) (mg)	5.56 ± 0.38	5.92 ± 0.36	0.501
Vitamin C (mg)	136.03 ± 6.18	130.92 ± 5.82	0.549
Vitamin A (mg)	617.90 ± 22.65	571.24 ± 21.18	0.134
Vitamin D (mg)	7.68 ± 0.72	8.10 ± 0.69	0.678
Vitamin E (mg)	7.10 ± 0.23	7.19 ± 0.22	0.772

Data are presented as estimated means ± SEM. ANCOVA analysis was performed adjusted by Study Number, Clinical Center and energy intake. ¹ Percentage of total energy intake. ANCOVA, analysis of covariance; MHO, metabolically healthy obesity; MUFA, monounsaturated fatty acids; MUO, metabolically unhealthy obesity; PUFA, polyunsaturated fatty acids; SEM, standard error of the mean; SFA, saturated fatty acids. Bold numbers highlight statistical significance.

Table S2. Hormonal concentrations (Population 2).

Variable	MHO	MUO	<i>p</i> -Value
Males	<i>n</i> = 6	<i>n</i> = 19	
17-β-Estradiol (pg/ml)	17.87±7.53	21.39±16.75	0.771
Testosterone (ng/dl)	4.40±16.75	3.37±1.49	0.092
DHEA-S (μg/dl)	127.00±105.00	168.84±173.92	0.849
SHBG (nmol/l)	48.88±28.56	29.36±18.76	0.080
Androstenedione (ng/ml)	1.68±0.66	1.53±0.91	0.588
C peptide (ng/ml)	3.46±2.31	3.53±2.33	0.915
TNF-α (pg/ml)	22.03±10.07	17.80±9.05	0.323
Leptin (ng/ml)	9.28±4.89	7.60±3.64	0.504
Pre-menopausal females	<i>n</i> = 4	<i>n</i> = 15	
17-β-Estradiol (pg/ml)	94.39±29.35	73.54±65.91	0.137
Testosterone (ng/dl)	0.13±0.06	0.33±0.32	0.234
DHEA-S (μg/dl)	101.00±46.16	134.47±99.92	0.841
SHBG (nmol/l)	63.05±44.42	61.85±52.98	0.484
Androstenedione (ng/ml)	1.09±0.20	1.80±0.99	0.079
C peptide (ng/ml)	2.70±0.78	4.87±2.68	0.089
TNF-α (pg/ml)	18.75±8.18	20.50±6.18	0.616
Leptin (ng/ml)	25.20±16.05	24.69±12.16	0.671

Post-menopausal females	<i>n</i> = 9	<i>n</i> = 19	
17- β -Estradiol (pg/ml)	11.44 $\pm$ 2.97	16.36 $\pm$ 23.18	0.740
Testosterone (ng/dl)	0.17 $\pm$ 0.10	0.24 $\pm$ 0.28	0.831
DHEA-S (μ g/dl)	53.56 $\pm$ 49.53	70.68 $\pm$ 62.98	0.290
SHBG (nmol/l)	72.06 $\pm$ 35.08	49.76 $\pm$ 22.04	0.076
Androstenedione (ng/ml)	1.37 $\pm$ 0.85	1.15 $\pm$ 0.55	0.639
C peptide (ng/ml)	2.80 $\pm$ 1.19	3.60 $\pm$ 1.49	0.192
TNF- α (pg/ml)	20.56 $\pm$ 9.61	25.63 $\pm$ 7.06	0.192
Leptin (ng/ml)	36.77 $\pm$ 19.62	27.46 $\pm$ 11.77	0.248

Data are presented as mean $\pm$ SD. Comparison of hormones concentrations between MHO and MUO phenotypes were realized with Student t test or Mann Whitney U test as appropriate. DHEA-S, dehydroepiandrosterone sulfate; MHO, metabolically healthy obesity; MUO, metabolically unhealthy obesity; SD, standard deviation; SHBG, sex hormone binding globulin; TNF- α , tumor necrosis factor- α .

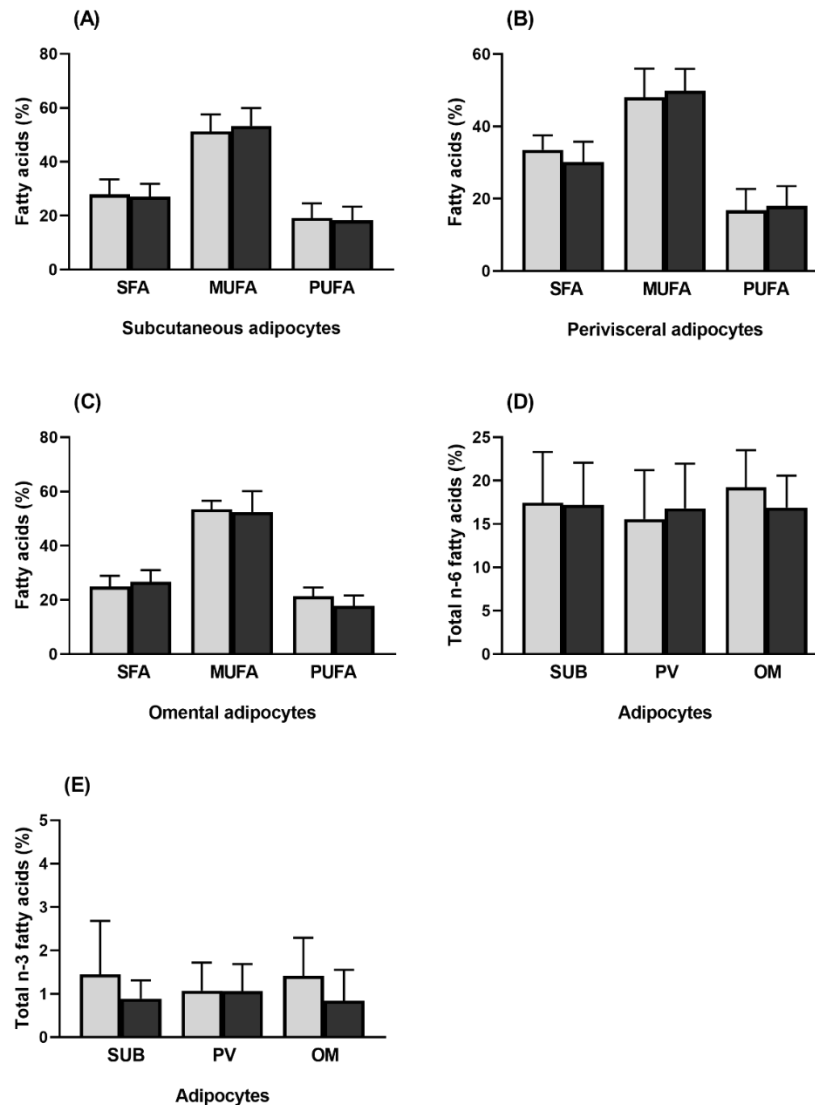


Figure S1. Fatty acids composition in subcutaneous, perivisceral and omental adipocytes (Population 2). Data were analyzed by Student t test or Mann Whitney U test as appropriate. (A) Fatty acids composition in SUB adipocytes in MHO and MUO subjects. (B) Fatty acids composition in PV adipocytes in MHO and MUO subjects. (C) Fatty acids composition in OM adipocytes in MHO and

MUO subjects. **(D)** Total n-6 fatty acids in the three regions of adipocytes in MHO and MUO subjects. **(E)** Total n-3 fatty acids in the three regions of adipocytes in MHO and MUO subjects. Grey bars indicate MHO and black bars indicate MUO. MHO, metabolically healthy obesity; MUFA, monounsaturated fatty acids; MUO, metabolically unhealthy obesity; OM, omental; PUFA, polyunsaturated fatty acids. PV, perivisceral; SFA, saturated fatty acids; SUB, subcutaneous.