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Supplemental Information

Consumption of Mediterranean versus Western Diet

Leads to Distinct Mammary Gland

Microbiome Populations

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Supplemental Table S1. Ingredients in experimental diets. Related to Table 1.

Western Diet		Mediterranean Diet	
DIET #: 1523		DIET #: 1530 (1497 + Banana)	
INGREDIENT	g/ 100g	INGREDIENT	g/100 g
Casein, USP	8.50	Casein, USP	1.74
Whey Protein 895	8.50	Whey protein - 895	1.74
		Dried Egg white	2.61
		Fishmeal (Menhaden)	2.61
		Walnuts	0.87
		Black Bean flour	4.35
		Garbanzo Bean flour	1.74
		Wheat Flour (S.Biscuit all purpose)	24.35
Dextrin	26.00	Dextrin	9.66
Sucrose	18.00	Sucrose	3.48
High Fructose Corn Syrup -55	7.00	Banana	13.04
		Applesauce	3.82
		Tomato paste	1.74
Cellulose (Alphacel)	7.94	Cellulose (Alphacel)	9.48
Total Fiber (% of diet)	7.94	Total fiber (% of diet)	12.7
Lard	4.15	Olive Oil (Filippo Berio)*	6.17
Beef Tallow HHR*	4.00	Menhaden Oil (Omegapure)	0.87
Butter, lightly salted	1.25	Butter, lightly salted	0.87
Corn Oil	3.50	Corn Oil	1.04
Flaxseed oil	0.30	Flaxseed oil	0.17
Dried Egg Yolk	0.60	Dried Egg Yolk	1.48
Crystalline Cholesterol	0.04		
Complete Vitamin Mix (Teklad)	2.50	Complete Vitamin Mix (Teklad)	2.17
Mineral Mix w/o Ca, P, NaCl	5.00	Mineral Mix w/o Ca, P, NaCl	4.35
Calcium Carbonate	0.43	Calcium Carbonate	0.37
Calcium Phosphate, Monobasic	0.75	Calcium Phosphate, Monobasic	0.65
NaCl (Table Salt)	1.60	NaCl (Table Salt)	0.63
TOTAL	100	TOTAL	100

Supplemental Table S2. Experimental diet composition compared with human dietary patterns. Related to Table 1.

	Human		Nonhuman Primate*	
	Western	Mediterranean	Western	Mediterranean
	% of Calories	% of Calories	% of Calories	% of Calories
Protein	15 ¹	17 ²	16	16
Carbohydrate	51 ¹	51 ²	54	54
Fat	33 ¹	32 ²	31	31
	% of Total Fats	% of Total Fats	% of Total Fats	% of Total Fats
Saturated	33 ¹	21 ²	37	21
Monounsaturated	36 ¹	56 ²	36	57
Polyunsaturated	24 ¹	15 ²	25	20
ω6:ω3 Fatty Acids	15:1 ⁵	2.1-3:1 ⁶	14.9:1	2.9:1
Cholesterol mg/Cal	0.13 ¹	0.16 ²	0.16	0.15
Fiber g/Cal	0.01 ¹	0.03 ³	0.02 ¹	0.04 ³
Sodium mg/Cal	1.7 ^{1,4}	1.3 ^{2,3}	1.7 ^{1,4}	1.1 ^{2,3}

¹ US Dept of Agriculture 2014, women 40-49 from NHANES *What We Eat* 2011-2012 ² Bedard,A., Riverin,M., Dodin,S., Corneau,L., and Lemieux,S. (2012). Sex differences in the impact of the Mediterranean diet on cardiovascular risk profile. *Br. J. Nutr.* 108, 1428-1434. (23)

³ Kafatos,A., Verhagen,H., Moschandreas,J., Apostolaki,I., and Van Westerop,J.J. (2000). Mediterranean diet of Crete: foods and nutrient content. *J. Am. Diet. Assoc.* 100, 1487-1493. (24)

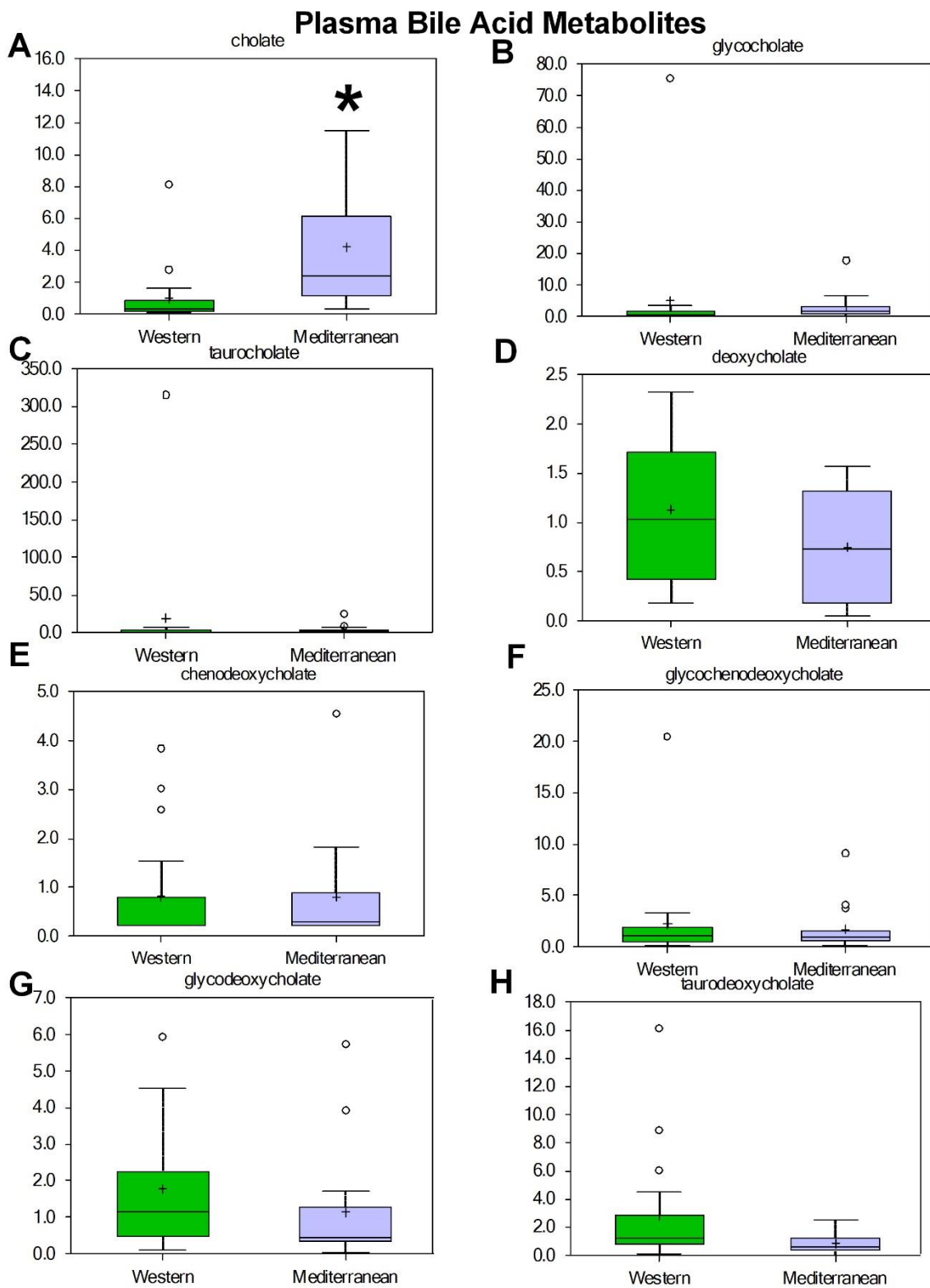
⁴ Powles,J., Fahimi,S., Micha,R., Khatibzadeh,S., Shi,P., Ezzati,M., Engell,R.E., Lim,S.S., Danaei,G., and Mozaffarian,D. (2013). Global, regional and national sodium intakes in 1990 and 2010: a systematic analysis of 24 h urinary sodium excretion and dietary surveys worldwide. *BMJ Open.* 3, e003733.(57)

⁵ Simopoulos,A.P. (2006). Evolutionary aspects of diet, the omega-6/omega-3 ratio and genetic variation: nutritional implications for chronic diseases. *Biomed. Pharmacother.* 60, 502-507. (58)

⁶ Cordain,L., Eaton,S.B., Sebastian,A., Mann,N., Lindeberg,S., Watkins,B.A., O'Keefe,J.H., and Brand-Miller,J. (2005). Origins and evolution of the Western diet: health implications for the 21st century. *Am. J. Clin. Nutr.* 81, 341-354.(25)

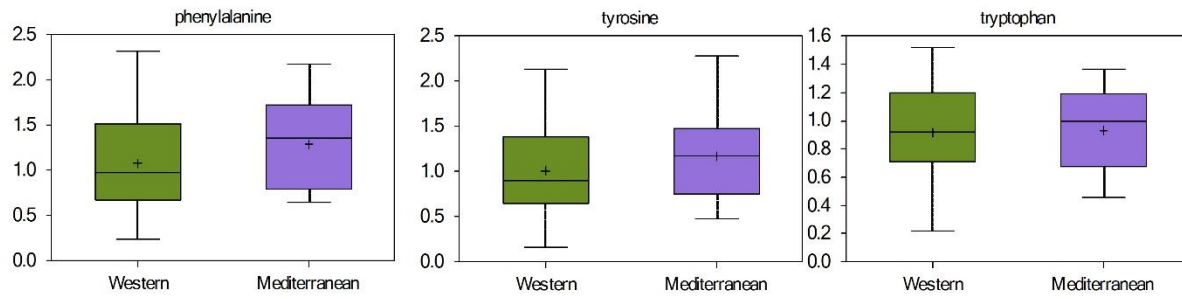
*These values were determined by diet composition analysis

Supplemental Figures and Legends:

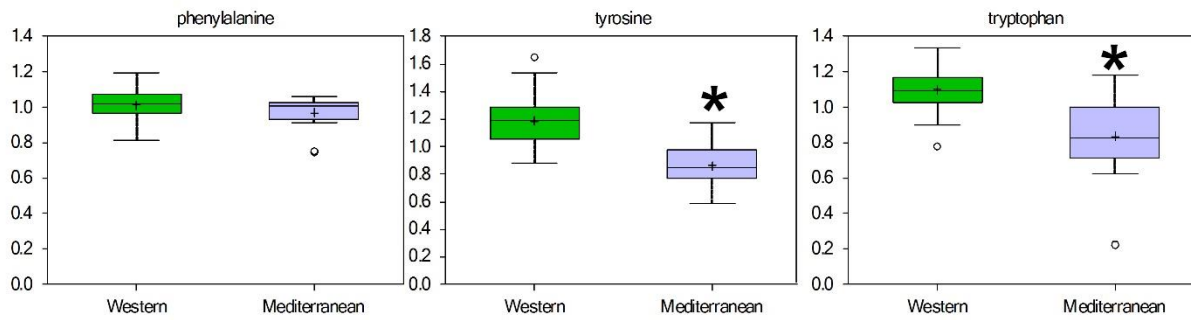


Supplemental Figure S1. Plasma bile acid metabolite levels in monkeys consuming a Western diet or Mediterranean diet for 23 months. Related to Figure 4. n=17-21; *p<0.05.

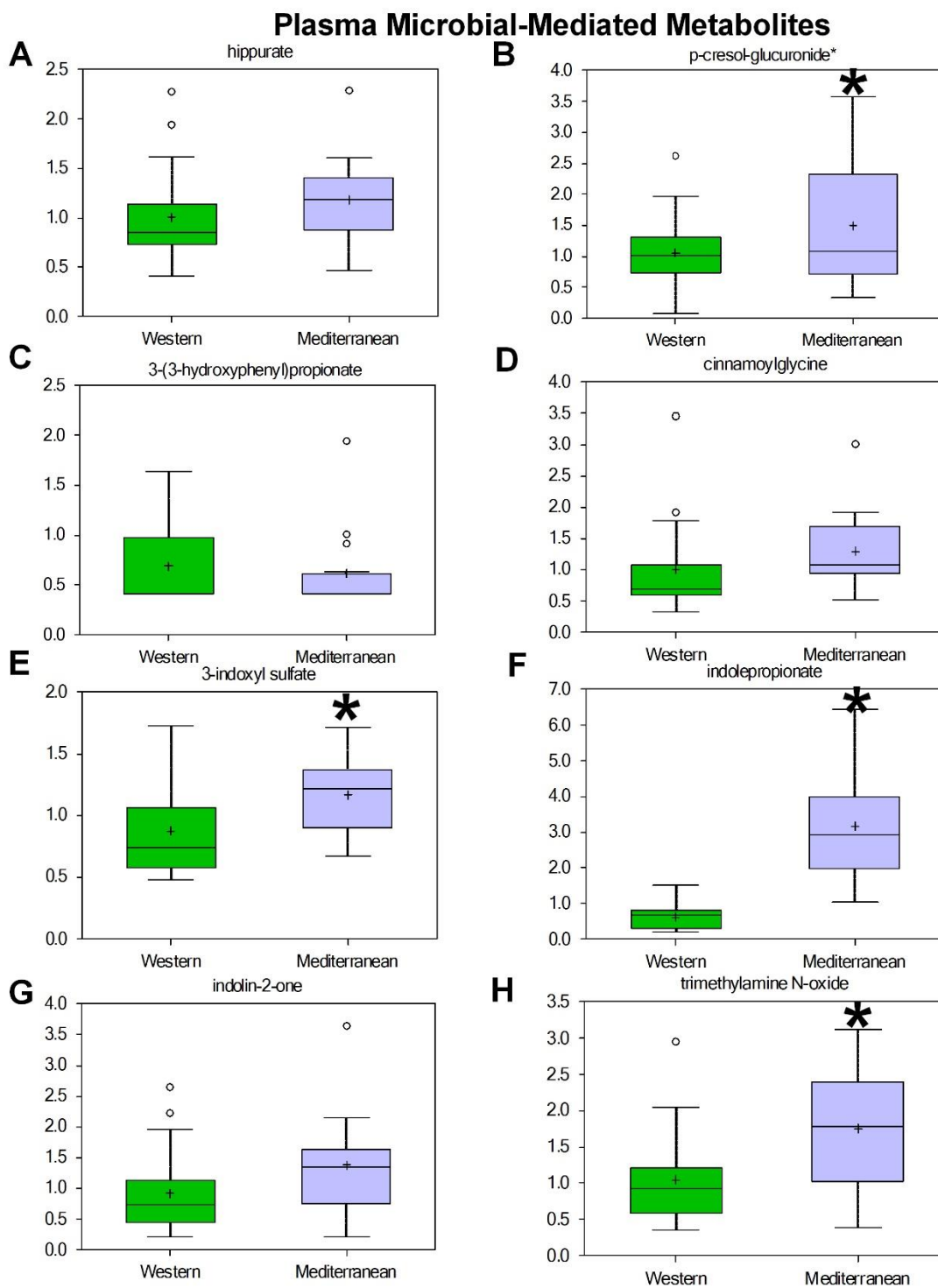
Mammary Gland Parental Amino Acid Metabolites



Circulating Plasma Parental Amino Acid Metabolites



Supplemental Figure S2. Mammary gland and plasma phenylalanine, tyrosine, and tryptophan amino acid levels in monkeys fed a Western diet or a Mediterranean diet. Related to Figure 5. n=17-21; *p<0.05.



Supplemental Figure S3. Plasma concentrations of microbial-modulated bioactive compounds in monkeys consuming a Western diet or Mediterranean diet for 23 months. Related to Figure 5. n=17-21; *p<0.05.