Supporting Information

Carmody et al. 10.1073/pnas.1112128108

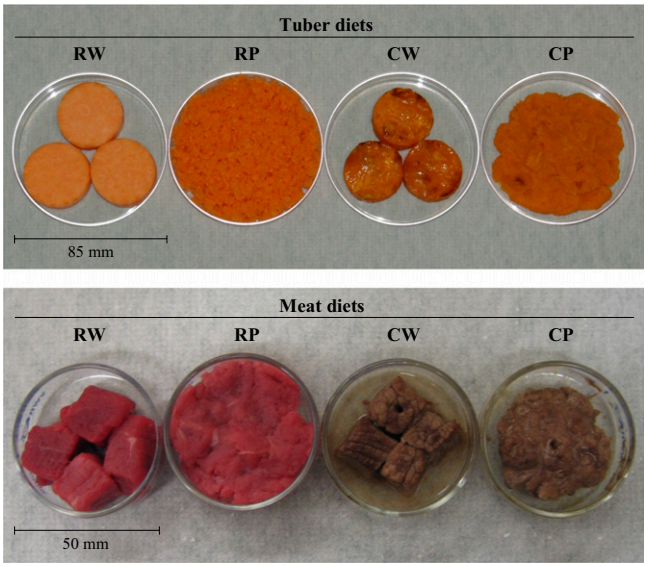

Fig. S1. Typical appearance of prepared tuber and meat diets. RW, raw and whole; RP, raw and pounded; CW, cooked and whole; CP, cooked and pounded.

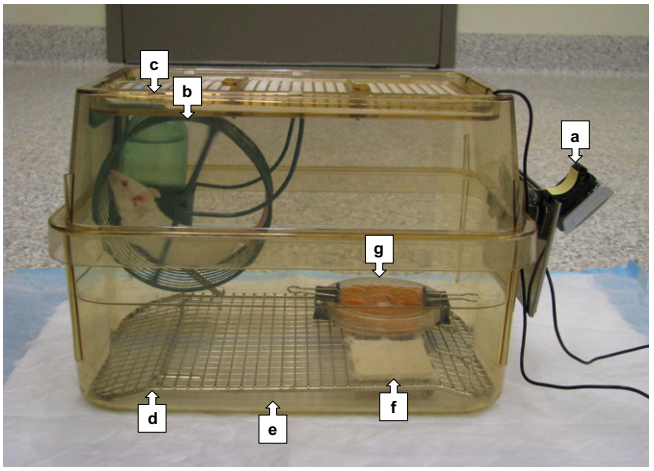

Fig. S2. Photograph of the experimental cage setup. Key features include (a) cycle counter with magnetic sensor, (b) exercise wheel with magnet mounted directly beneath the magnetic sensor, (c) water supply (changed daily), (d) wire mesh floor, (e) filter paper cage liner (changed daily), (f) cotton nestlet (changed daily), and (g) feeding apparatus consisting of a modified Petri dish affixed to the cage floor with a pair of sterile plastic-coated neodymium magnets.

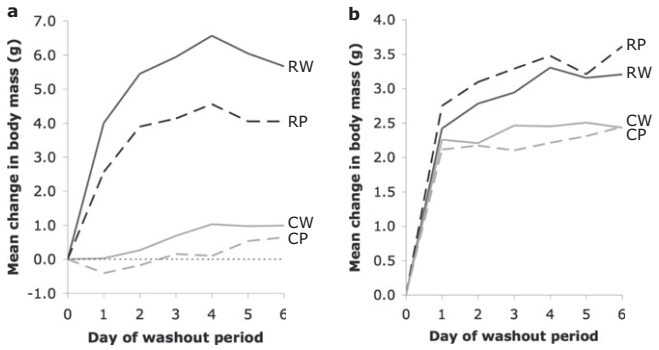

Fig. S3. Mean cumulative change in body mass experienced over the 6-d washout periods of ad libitum chow after the raw and whole (RW), raw and pounded (RP), cooked and whole (CW), and cooked and pounded (CP) treatments of (*A*) tuber and (*B*) meat. As expected under effective washout dynamics, cumulative increases in body mass during the washout period were inversely related to the cumulative losses in body mass experienced on the treatment diets.

Table S1. Energy contents of raw and cooked beef (*Bos taurus*) eye round as determined by the Atwater system (1)

	Fresh-weight basis (per 100 g)*		Dry-weight basis (per 100 g)†	
Nutrient	Raw	Cooked	Raw	Cooked
Energy (kcal)	173	212	550	549
Energy (kJ)	724	888	2,304	2,298
Water (g)	69	61	0	0
Protein (g)	22	28	69	74
Lipid (g)	9	10	28	26
Carbohydrate (g)	0	0	0	0
Ash (g)	1	1	3	3

*Fresh-weight values are as reported in the USDA National Nutrient Database for Standard Reference (1) under the following databank codes: raw = 13879; cooked = 13880.
†Dry-weight values are determined from the fresh-weight values by subtracting water (energy value = 0) and rescaling to 100 g.

1. US Department of Agriculture, Agricultural Research Service (2011) *USDA National Nutrient Database for Standard Reference* (*Release 24*). Available at http://www.ars.usda.gov/ba/bhnrc/ndl. Accessed October 1, 2011.

Table S2. Energy contents of raw and cooked sweet potato (*Ipomoea batatas*) as determined by the Atwater system (1)

	Fresh-weight basis (per 100 g)*		Dry-weight basis (per 100 g)†	
Nutrient	Raw	Cooked	Raw	Cooked
Energy (kcal)	86	90	379	372
Energy (kJ)	359	378	1,580	1,561
Water (g)	77	76	0	0
Protein (g)	2	2	7	8
Lipid (g)	0	0	0	1
Carbohydrate (g)	20	21	89	86
Ash (g)	1	1	4	6

*Fresh-weight values are as reported in the USDA National Nutrient Database for Standard Reference (1) under the following databank codes: raw = 11507; cooked = 11508.
†Dry-weight values are determined from the fresh-weight values by subtracting water (energy value = 0) and rescaling to 100 g.

1. US Department of Agriculture, Agricultural Research Service (2011) *USDA National Nutrient Database for Standard Reference* (*Release 24*). Available at http://www.ars.usda.gov/ba/bhnrc/ndl. Accessed October 1, 2011.

Table S3. Nutritional composition of diets (per 100 g)

	Tuber study					Meat study				
	Sweet potato (*I. batatas*)				Chow	Beef (*B. taurus*) eye round				Chow
	RW	RP	CW	CP	Washout	RW	RP	CW	CP	Washout
Fresh-weight basis										
Water (g)*	81.5 ± 0.5	78.0 ± 1.1	70.9 ± 1.2	70.3 ± 1.1	8.7 ± 0.1	73.3 ± 0.7	73.6 ± 0.7	65.3 ± 1.1	65.3 ± 2.2	9.7 ± 0.1
Protein (g)†	0.9 ± 0.0	1.2 ± 0.1	1.4 ± 0.0	1.4 ± 0.0	22.3 ± 0.1	22.3 ± 0.9	22.3 ± 0.3	29.2 ± 0.7	29.0 ± 0.9	21.8 ± 0.1
Lipid (g)‡	0.3 ± 0.0	0.2 ± 0.0	0.1 ± 0.0	0.1 ± 0.0	6.1 ± 0.2	3.3 ± 0.7	2.6 ± 0.4	4.1 ± 0.7	3.7 ± 1.1	5.5 ± 0.1
Fiber (g)§	1.5 ± 0.2	1.9 ± 0.1	1.6 ± 0.2	1.5 ± 0.0	15.5 ± 0.1	—	—	—	—	15.5 ± 0.1
Ash (g)¶	0.7 ± 0.0	0.8 ± 0.1	0.9 ± 0.0	1.0 ± 0.1	7.0 ± 0.1	1.1 ± 0.0	1.1 ± 0.0	1.4 ± 0.0	1.5 ± 0.1	6.5 ± 0.3
Carbohydrate (g)‖	15.2 ± 0.2	17.9 ± 1.3	25.1 ± 1.0	25.6 ± 1.0	40.4 ± 0.3	−0.1 ± 0.3	0.4 ± 0.1	−0.1 ± 0.3	0.5 ± 0.2	41.0 ± 0.2
Total starch (g)**	7.7 ± 0.4	9.5 ± 1.3	6.5 ± 0.6	8.7 ± 0.6	42.7 ± 0.6	—	—	—	—	42.7 ± 0.6
Gross energy (kcal)††	81 ± 2	96 ± 6	128 ± 5	131 ± 4	461 ± 2	185 ± 10	171 ± 6	217 ± 3	217 ± 19	456 ± 3
Metabolizable energy (kcal)‡‡	67 ± 1	78 ± 5	107 ± 4	109 ± 4	306 ± 1	119 ± 6	114 ± 5	154 ± 7	151 ± 14	301 ± 1
Dry-weight basis										
Water (g)	0	0	0	0	0	0	0	0	0	0
Protein (g)	4.7 ± 0.1	5.8 ± 1.0	4.9 ± 0.2	4.8 ± 0.2	24.4 ± 0.1	83.8 ± 2.8	84.3 ± 1.0	84.2 ± 0.9	84.0 ± 2.9	24.1 ± 0.1
Lipid (g)	1.4 ± 0.1	0.8 ± 0.2	0.5 ± 0.2	0.3 ± 0.1	6.7 ± 0.2	12.2 ± 2.3	10.0 ± 1.5	11.7 ± 1.8	10.3 ± 2.5	6.1 ± 0.1
Fiber (g)	8.3 ± 1.0	8.6 ± 0.5	5.3 ± 0.4	5.2 ± 0.0	16.9 ± 0.1	—	—	—	—	17.2 ± 0.1
Ash (g)	3.6 ± 0.1	3.9 ± 0.7	3.1 ± 0.0	3.4 ± 0.1	7.6 ± 0.1	4.2 ± 0.3	4.2 ± 0.1	4.2 ± 0.1	4.4 ± 0.1	7.2 ± 0.4
Carbohydrate (g)	82.0 ± 1.2	81.1 ± 2.0	86.2 ± 0.1	86.2 ± 0.3	44.3 ± 0.4	−0.2 ± 1.0	1.5 ± 0.5	−0.1 ± 0.8	1.3 ± 0.4	45.4 ± 0.2
Total starch (g)	41.4 ± 1.8	42.9 ± 3.7	22.2 ± 2.0	29.3 ± 0.9	46.8 ± 0.6	—	—	—	—	47.3 ± 0.6
Gross energy (kcal)	410 ± 1	411 ± 6	409 ± 1	410 ± 2	505 ± 3	582 ± 12	580 ± 8	590 ± 13	580 ± 13	505 ± 3
Metabolizable energy (kcal)	360 ± 4	354 ± 5	369 ± 2	367 ± 1	335 ± 1	444 ± 12	433 ± 8	442 ± 9	434 ± 13	333 ± 1

—, value below the detection threshold of the biochemical assay. All columns are $n = 3$ and mean ± SE.

*Water content determined as grams of sample lost after freeze-drying to constant mass and hot-weighing the residue at 100 °C.

†Crude protein content determined using the Kjeldahl procedure for total nitrogen (1).

‡Total lipid content determined by petroleum ether extraction (2).

§Neutral detergent fiber content determined based on the Detergent System of Fiber Analysis (3).

¶Ash content determined by burning sample in a muffle furnace at 500 °C and hot-weighing the residue at 100 °C.

‖Total nonstructural carbohydrate content determined by difference (2): carbohydrate (g) = 100 g − water (g) − protein (g) − lipid (g) − fiber (g) − ash (g). Because this value is determined by difference, a slightly negative mean value is possible for a sample with negligible carbohydrate content.

**Total starch determined using an amyloglucosidase/α-amylase kit (Total Starch Kit; Megazyme).

††Gross energy content determined by bomb calorimetry.

‡‡Metabolizable energy calculated from macronutrient contents using conventional multipliers (2): 4 kcal/g for crude protein, 9 kcal/g for total lipid, and 4 kcal/g for total nonstructural carbohydrate. Despite their widespread use in food labeling, current multipliers ignore important costs of the digestive process and thus, require additional refinement and validation in vivo (4).

1. Pierce WC, Haenisch EL (1947) *Quantitative Analysis* (Wiley, New York).
2. Conklin-Brittain NL, Knott CD, Wrangham RW (2006) *Feeding Ecology in Apes and Other Primates: Ecological, Physical and Behavioral Aspects*, eds Hohmann G, Robbins MM, Boesch C (Cambridge University Press, Cambridge, UK), pp 445–471.
3. Robertson JB, van Soest PJ (1980) *The Analysis of Dietary Fiber in Food*, eds James WPT, Theander O (Marcel Dekker, New York), pp 123–158.
4. Livesey G (1995) The impact of complex carbohydrates on energy balance. *Eur J Clin Nutr* 49(Suppl 3):S89–S96.