SUPPLEMENTARY MATERIAL

Supplemental Table 1. Plasma Amino Acid Concentration (µM)

	Lean Zucker			Obese Zucker			
	LRD	**LHP**	**LLP**	**ORD**	**OHP**	**OLP**	**Anova**
Glu	81.2 ± 18.1	278 ± 49.3 *	447 ± 64.4	165 ± 12.4	111 ± 9.97	263 ± 48.4 *	S, D
Gln	1953 ± 128	896 ± 105 *	970 ± 153 *	711 ± 62.1	656 ± 42.8	728 ± 83.8	S, D
Asp	255 ± 34.1	404 ± 68.1	466 ± 88.1 *	29.5 ± 1.81	21.1 ± 3.71	34.3 ± 4.98	S
Asn	13.2 ± 2.94	98.8 ± 21.2 *	54.3 ± 3.56 *	30.3 ± 2.64	45.4 ± 6.39	51.1 ± 9.56	D
Ala	232 ± 18.5	376 ± 37.5 *	492 ± 26.2 *	434 ± 35.1	347 ± 33.1	419 ± 49.1	D
Ser	182 ± 18.2	331 ± 41.1 *	543 ± 77.1 *	199 ± 8.26	154 ± 10.4	276 ± 31.3	S, D
Gly	243 ± 24.2	369 ± 40.1	757 ± 96.1 *	214 ± 7.51	160 ± 16.6	386 ± 28.4	S, D
Pro	62.8 ± 5.09	217 ± 19.6 *	222 ± 38.1 *	297 ± 39.2	168 ± 25.5	406 ± 96.5	S, D
Arg	50.1 ± 6.47	205 ± 39.6 *	114 ± 12.1	177 ± 15.1	149 ± 19.9	96.1 ± 9.09 *	D
Tyr	70.1 ± 2.98	126 ± 25.4 *	37.2 ± 4.35	110 ± 7.62	72.6 ± 8.33	82.2 ± 14.1	D
Phe	46.5 ± 2.98	93.7 ± 13.7 *	41.7 ± 5.62	62.6 ±5.40	53.1 ± 6.90	73.3 ± 5.44	D
Val	84.6 ± 8.56	303 ± 51.7 *	165 ± 11.4	231 ± 12.3	282 ± 25.5	217 ± 27.6	S, D
Leu	79.4 ± 5.55	188 ± 18.6 *	84.4 ± 6.45	189 ± 8.03	225 ± 13.1	170 ± 27.2	S, D
Ile	30.9 ± 1.21	136 ± 20.1 *	58.1 ± 6.62	113 ± 7.94	135 ± 4.95	120 ± 16.2	S, D
Thr	119 ± 8.91	359 ± 59.1 *	89.4 ± 12.1	289 ± 13.2	204 ± 15.4	299 ± 54.2	S, D
Lys	229 ± 14.6	464 ± 75.6 *	188 ± 47.1	356 ± 15.4	426 ± 36.6	462 ± 84.1	S, D
His	38.3 ± 4.01	112 ± 12.5 *	69.2 ± 12.1	61.8 ± 4.77	54.3 ± 2.73	57.1 ± 19.7	D
Taurine	213 ± 8.95	500 ± 60.1 *	469 ± 63.5 *	382 ± 42.2	351 ± 63.2	399 ± 50.1	D
Trp	16.1 ± 2.68	37.2 ± 5.82	13.9 ± 3.11 *	69.3 ± 11.1	44.2 ± 10.3	21.2 ± 9.09 *	
Met	53.5 ± 20.1	38.1 ± 2.66	26.1 ± 2.91 *	51.5 ± 5.77	48.8 ± 4.11	40.6 ± 12.1	D
Cys	9.94 ± 1.11	13.5 ± 2.15	10.2 ± 1.01	14.4 ± 2.32	12.5 ± 2.31	15.1 ± 1.84	

Two-way ANOVA (Diet (D), Strain (S)) P<0.05. Bonferroni post-hoc test: * = P<0.05 vs RD diet.

Supplemental Table 2. Amino Acid Content in Total Homogenate on Day 60 (mmols)

	Lean Zucker			Obese Zucker			
	LRD	**LHP**	**LLP**	**ORD**	**OHP**	**O LP**	**Anova**
Glx	25.9 ± 2.47	32.4 ± 2.97 *	11.1 ± 0.94 *	29.6 ± 2.27	17.1 ± 1.03 *	18.4 ± 0.26 *	D
Asx	17.1 ± 1.83	23.6 ± 2.19 *	8.33 ± 0.69 *	23.5 ± 1.74	23.2 ± 1.65	14.5 ± 0.56 *	S, D
Ala	20.3 ± 1.55	26.1 ± 2.39	9.54 ± 0.76 *	23.4 ± 3.98	23.7 ± 1.51	15.3 ± 0.43 *	D
Ser	13.5 ± 1.32	17.3 ± 1.63	6.07 ± 0.56 *	17.5 ± 1.39	17.1 ± 1.03	10.4 ± 0.66 *	S, D
Gly	33.7 ± 2.29	41.5 ± 4.04	16.7 ± 1.77 *	23.4 ± 3.96	36.4 ± 2.61 *	24.6 ± 0.92	D
Pro	14.9 ± 1.04	18.9 ± 1.91 *	7.21 ± 0.58	17.3 ± 1.18	15.9 ± 0.89 *	10.7 ± 0.33 *	D
Arg	11.6 ± 0.99	13.9 ± 1.31	5.05 ± 0.34 *	11.8 ± 0.85	12.5 ± 0.93	7.78 ± 0.32 *	D
Tyr	6.03 ± 0.65	6.30 ± 0.61	2.64 ± 0.19 *	7.03 ± 0.05	8.42 ± 0.85	3.79 ± 0.27 *	S, D
Phe	6.96 ± 0.71	8.18 ± 0.78	2.95 ± 0.24 *	8.11 ± 0.59	7.92 ± 0.60	4.84 ± 0.16 *	D
Val	10.1 ± 0.99	11.4 ± 1.08	3.87 ± 0.24 *	12.3 ± 1.77	13.6 ± 2.19	5.22 ± 1.22 *	D
Leu	16.6 ± 1.69	17.2 ± 1.65	5.81 ± 0.46 *	17.5 ± 1.08	18.6 ± 1.36	10.9 ± 0.41 *	S, D
Ile	7.31 ± 0.77	7.54 ± 0.73	2.65 ± 0.17 *	8.26 ± 0.53	8.02 ± 0.69	4.10 ± 0.22 *	S, D

Table 2. contd…

	Lean Zucker			Obese Zucker			
	LRD	**LHP**	**LLP**	**ORD**	**OHP**	**O LP**	**Anova**
Thr	11.7 ± 1.31	14.4 ± 1.34	5.03 ± 0.43 *	16.2 ± 1.22	15.8 ± 1.16	8.76 ± 1.11 *	S, D
Lys	14.2 ± 1.34	17.3 ± 1.65	6.03 ± 0.43 *	18.9 ± 1.38	16.4 ± 1.13	9.83 ± 0.63 *	S, D
His	4.11 ± 0.40	4.99 ± 0.49	1.73 ± 0.14 *	6.08 ± 0.52	4.77 ± 0.35 *	2.91 ± 0.17 *	S, D
Cys	4.33 ± 0.53	6.07 ± 0.56	1.51 ± 0.16 *	2.68 ± 0.31	4.97 ± 1.15	3.12 ± 0.54	S, D
Met	3.78 ± 0.30	4.95 ± 0.49	1.75 ± 0.18 *	5.09 ± 0.27	4.80 ± 0.61	2.89 ± 0.32	S, D

Two-way ANOVA (Diet (D), Strain (S)) P<0.05. Bonferroni post-hoc test: * = P<0.05 vs RD diet.

Supplemental Table 3. Amino Acids Ingested in 30 Days (mmols)

	Lean Zucker			Obese Zucker			
	LRD	**LHP**	**LLP**	**ORD**	**OHP**	**OLP**	**Anova**
Glx	62.8 ± 1.35	118 ± 2.11 *	16.1 ± 1.05 *	276 ± 10.9	302 ± 6.53 *	113 ± 7.08 *	S, D
Asx	86.9 ± 1.87	127 ± 2.28 *	20.8 ± 1.35 *	94.3 ± 3.75	207 ± 4.48 *	63.1 ± 3.96 *	S, D
Ala	53.8 ± 1.16	71.8 ± 1.28 *	20.8 ± 1.35 *	140 ± 5.56	142 ± 3.07	50.4 ± 2.52 *	S, D
Ser	36.2 ± 0.78	56.8 ± 1.01 *	12.4 ± 0.81 *	96.3 ± 3.81	126 ± 2.73 *	32.3 ± 2.01 *	S, D
Gly	56.8 ± 1.22	75.3 ± 1.34 *	19.6 ± 1.28 *	146 ± 5.81	153 ± 3.32	49.4 ± 2.38 *	S, D
Pro	80.9 ± 1.74	111 ± 1.98 *	17.3 ± 1.12 *	128 ± 4.84	160 ± 3.46 *	50.4 ± 2.11 *	S, D
Arg	39.2 ± 0.84	73.3 ± 1.29 *	4.84 ± 0.31 *	97.1 ± 2.34	130 ± 2.25 *	31.3 ± 1.58 *	S, D
Tyr	13.1 ± 0.28	25.9 ± 0.46 *	3.69 ± 0.24 *	19.7 ± 0.78	37.3 ± 0.81 *	7.17 ± 0.45 *	S, D
Phe	32.6 ± 0.70	53.9 ± 0.96 *	4.84 ± 0.31 *	49.3 ± 1.95	99.6 ± 1.67 *	33.1 ± 0.59 *	S, D
Val	62.3 ± 1.34	84.8 ± 1.51 *	5.54 ± 0.36 *	94.1 ± 3.72	159 ± 2.63 *	47.4 ± 0.67 *	S, D
Leu	53.3 ± 1.15	76.4 ± 1.36 *	16.7 ± 1.08 *	80.4 ± 3.18	136 ± 2.37 *	69.5 ± 2.01 *	S, D
Ile	36.2 ± 0.78	64.3 ± 1.14 *	6.23 ± 0.41 *	54.6 ± 2.16	123 ± 2.03 *	25.7 ± 0.76 *	S, D
Thr	34.7 ± 0.74	51.9 ± 0.92 *	16.8 ± 1.09 *	52.3 ± 2.07	74.8 ± 1.62 *	32.7 ± 2.04 *	S, D
Lys	36.2 ± 0.78	51.9 ± 0.92 *	6.23 ± 0.41 *	54.6 ± 2.16	131 ± 1.97 *	29.7 ± 0.75 *	S, D
His	20.6 ± 0.44	36.9 ± 0.66 *	6.01 ± 0.39 *	48.5 ± 1.23	73.2 ± 1.14 *	19.1 ± 1.19 *	S, D

Two-way ANOVA (Diet (D), Strain (S)) P<0.05. Bonferroni post-hoc test: * = P<0.05 vs RD diet.

Supplemental Table 4. Amino Acids Excreted in Urine in 30 Days (µmols)

	Lean Zucker			Obese Zucker			
	LRD	**LHP**	**LLP**	**ORD**	**OHP**	**OLP**	**Anova**
Glx	81.5 ± 6.52	90.4 ± 11.1 *	59.3 ± 5.13	92.1 ± 9.85	208 ± 11.5 *	39.8 ± 4.21 *	S, D
Asx	56.3 ± 3.13	161 ± 15.4 *	23.1 ± 2.12	152 ± 8.88	91.5 ± 11.1 *	148 ± 31.2	S, D
Ala	50.1 ± 3.71	148 ± 6.24 *	92.9 ± 11.3 *	143 ± 5.66	143 ± 4.66	118 ± 22.6	S, D
Ser	40.5 ± 3.36	52.3 ± 2.13	10.7 ± 0.58 *	90.9 ± 10.1	90.9 ± 10.1	26.6 ± 3.58 *	S, D
Gly	134 ± 10.1	666 ± 43.1 *	133 ± 9.95	335 ± 44.6	336 ± 24.9 *	286 ± 34.5	S, D
Pro	13.9 ± 1.01	80.3 ± 2.97 *	14.1 ± 2.12	154 ± 34.2	154 ± 30.4	45.1 ± 15.2 *	S, D
Arg	21.1 ± 2.27	40.1 ± 5.94	4.51 ± 0.62	39.4 ± 10.6	39.4 ± 8.11	9.75 ± 1.15 *	D
Tyr	7.18 ± 1.04	32.8 ± 0.71 *	7.55 ± 0.82	54.2 ± 9.16	68.2 ± 3.56 *	24.5 ± 1.35 *	S, D
Phe	9.49 ± 1.90	39.7 ± 4.58 *	7.23 ± 0.73	46.5 ± 5.96	46.5 ± 5.96	15.1 ± 1.96 *	S, D
Val	7.45 ± 2.21	29.9 ± 6.31 *	4.33 ± 0.53	35.6 ± 8.34	35.6 ± 8.34	18.7 ± 7.81	S, D
Leu	16.8 ± 1.86	64.5 ± 12.1 *	7.25 ± 1.22	22.3 ± 11.1	48.6 ± 2.13 *	13.5 ± 2.11	D
Ile	14.7 ± 2.34	59.5 ± 10.1 *	6.13 ± 2.11	32.5 ± 11.1	44.6 ± 12.1	14.6 ± 2.66	D

Table 4. contd…

	Lean Zucker			Obese Zucker			
	LRD	**LHP**	**LLP**	**ORD**	**OHP**	**OLP**	**Anova**
Thr	47.9 ± 3.88	132 ± 5.21 *	18.2 ± 1.55 *	113 ± 7.13	113 ± 7.13	56.1 ± 13.1 *	S, D
Lys	12.8 ± 0.81	63.1 ± 4.58 *	8.81 ± 1.13	59.4 ± 11.2	59.4 ± 7.11	21.3 ± 7.85 *	S, D
His	36.6 ± 5.35	29.1 ± 3.53	4.96 ± 0.16 *	25.9 ± 3.16	25.9 ± 3.16	27.3 ± 8.62	D
Taurine	691 ± 148	2992 ± 285 *	80.2 ± 12.9	4360 ± 340	4361 ± 204	377 ± 119 *	S, D
Cys	27.3 ± 3.60	62.1 ± 8.21 *	13.4 ± 3.39	67.1 ± 10.9	67.1 ± 8.25	39.9 ± 3.75 *	S, D
Total	1377 ± 208	4514 ± 128 *	482 ± 33.5	5729 ± 633	5750 ± 474	1437 ± 125 *	S, D

Two-way ANOVA (Diet (D), Strain (S)) P<0.05. Bonferroni post-hoc test: * = P<0.05 vs RD diet.

Supplemental Table 5. Amino Acid Accretion Rate (µmols/Day)

	Lean Zucker			Obese Zucker			
	LRD	**LHP**	**LLP**	**ORD**	**OHP**	**OLP**	**Anova**
Glx	640 ± 36.1	802 ± 109	127 ± 23.1 *	653 ± 93.4	602 ± 70.2	280 ± 24.1 *	D
Asx	404 ± 41.3	606 ± 82.6 *	118 ± 13.6 *	518 ± 72.6	489 ± 71.6	222 ± 16.9 *	D
Ala	482 ± 37.1	665 ± 86.4	122 ± 22.3 *	522 ± 98.1	518 ± 68.6	273 ± 50.6 *	D
Ser	320 ± 30.1	431 ± 60.8	75.2 ± 15.1 *	384 ± 55.2	362 ± 49.4	155 ± 22.2 *	D
Gly	801 ± 54.1	1017 ± 147	224 ± 73.1 *	719 ± 119	830 ± 97.2	471 ± 74.3 *	D
Pro	355 ± 25.6	472 ± 66.6	93.7 ± 19.2 *	379 ± 51.2	321 ± 35.9	163 ± 24.1 *	D
Arg	276 ± 23.3	339 ± 47.2	56.8 ± 9.85 *	259 ± 35.7	275 ± 37.1	128 ± 14.8 *	D
Tyr	143 ± 15.3	146 ± 25.3	19.3 ± 4.73 *	154 ± 21.9	196 ± 34.2	48.3 ± 7.93 *	D
Phe	165 ± 16.6	198 ± 28.8	32.7 ± 6.21 *	178 ± 24.2	166 ± 27.0	73.2 ± 4.94 *	D
Val	236 ± 22.6	272 ± 30.4	34.2 ± 5.94 *	263 ± 47.5	301 ± 82.2	53.7 ± 5.91 *	D
Leu	393 ± 38.7	379 ± 59.5	38.1 ± 9.01 *	384 ± 48.1	409 ± 59.6	173 ± 13.7 *	D
Ile	173 ± 18.4	173 ± 27.2	19.7 ± 5.55 *	180 ± 22.8	167 ± 30.9	47.4 ± 5.95 *	D
Thr	277 ± 29.8	353 ± 25.3	59.7 ± 10.1 *	518 ± 72.6	329 ± 58.1 *	119 ± 28.9 *	D, S
Lys	335 ± 33.4	424 ± 60.9	68.3 ± 10.2 *	413 ± 54.9	316 ± 56.1	123 ± 10.4 *	D
His	97.6 ± 9.93	122 ± 18.3	18.9 ± 3.52 *	133 ± 19.3	86.1 ± 13.8 *	31.3 ± 3.53 *	D
Cys	58.1 ± 11.1	133 ± 14.5 *	78.3 ± 18.6	58.1 ± 10.1	133 ± 40.1 *	78.3 ± 13.8	D
Met	110 ± 9.98	96.8 ± 11.1	43.3 ± 7.93 *	110 ± 11.2	96.8 ± 18.5	43.3 ± 7.93 *	D

Two-way ANOVA (Diet (D), Strain (S)) P<0.05. Bonferroni post-hoc test: * = P<0.05 vs RD diet.