

## **Supplementary materials**

**Table S1.** Nutritional information TD.06414 (Envigo)

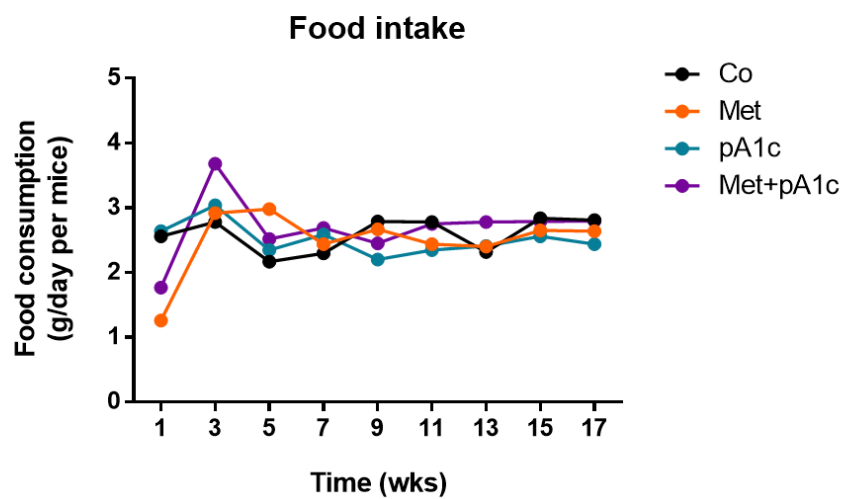
Formula	g/Kg	Composition	% by weight	% kcal from
Lard	310.0	Fat	34.3	60.3
Casein	265.0	Carbohydrate	27.3	21.4
Maltodextrin	160.0	Protein	23.5	18.3
Sucrose	90.0	Kcal/g	5.1	
Cellulose	65.5			
Mineral Mix, AIN-93G-MX (94046)	48.0			
Soybean Oil	30.0			
Vitamin Mix, AIN-93-VX (94047)	21.0			
L-Cystine	4.0			
Calcium Phosphate, dibasic	3.4			
Choline Bitartrate	3.0			
Blue Food Color	0.1			

Information obtained from Envigo Teklad Diets

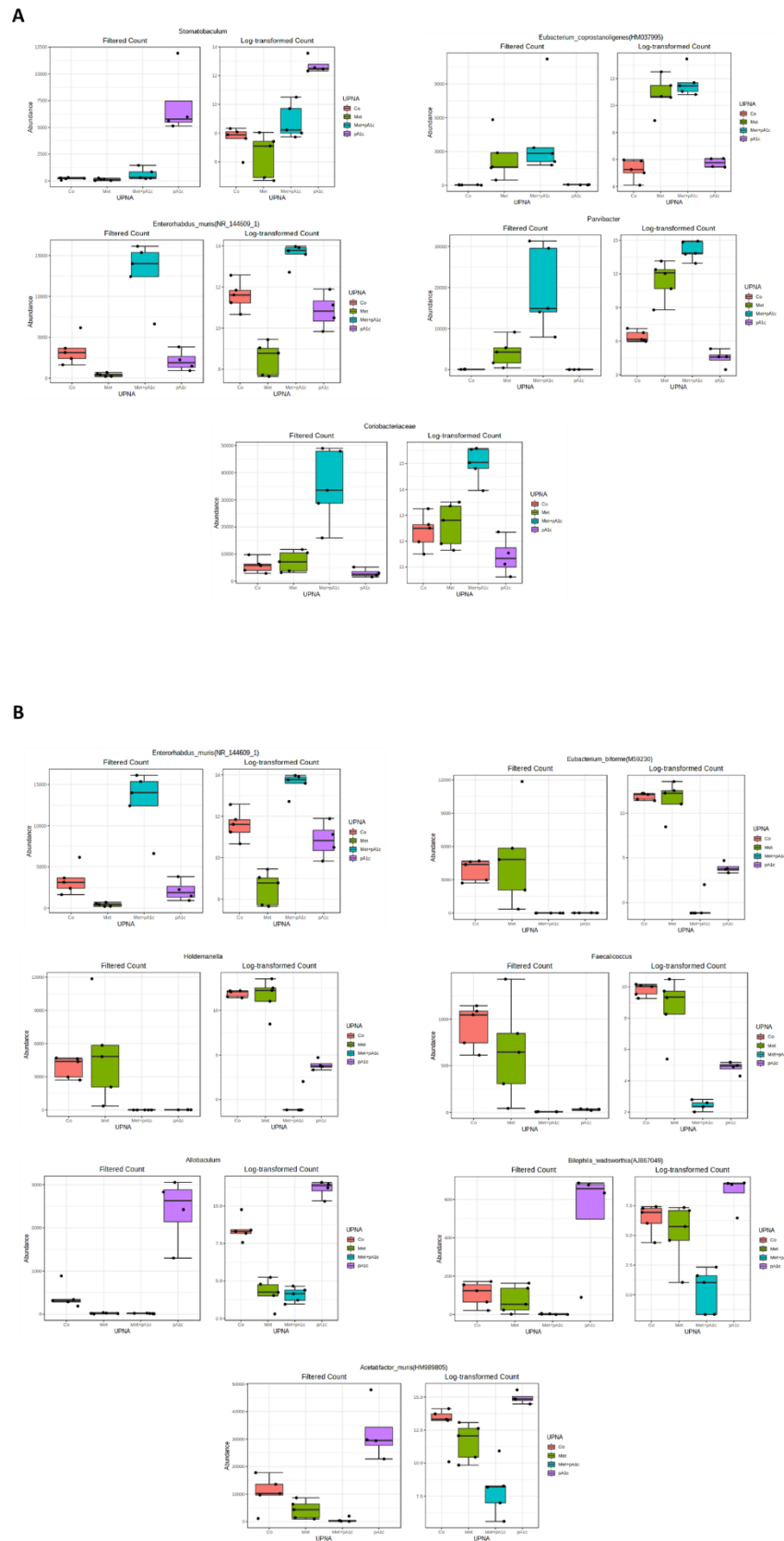
**Table S2.** Sequences of primers used in gene expression analysis.

Target gene	Forward/ Reverse	Primer sequence (5' to 3')	Source
<i>Acox</i>	F	CTATGGGATCAGCCAGAAAG	[105]
	R	AGTCAAAGGCATCCACCAA	
<i>Cpt1</i>	F	CGAGGATTCTCTGGAAGTGC	[105]
	R	GGTCGCTTCTTCAAGGTCTG	
<i>Fasn</i>	F	AGCCATGGAGGAGGTGGTGAT	[106]
	R	GTGTGCCTGCTTGGGGTGGAC	
<i>Gck</i>	F	CTTCACCTTCTCCTTCCCTGTAA	[107]
	R	AAAGTCCCCTCTCCTCTTGATAG	
<i>G6Pase</i>	F	CACCGACTACTACAGCAACAGC	[107]
	R	AGAATCCCAACCACAAGATGAC	
<i>Il-1<math>\beta</math></i>	F	TCGCTCAGGGTCACAAGAAA	[106]
	R	CATCAGAGGCAAGGAGGAAAAC	
<i>Il-6</i>	F	ACAAGTCGGAGGCTTAATTACACAT	[106]
	R	TTGCCATTGCACAACCTCTTTTC	
<i>Ppara</i>	F	ACTGGTAGTCTGCAAAACCAAA	[106]
	R	AGAGCCCCATCTGTCCTCTC	
<i>Ppar<math>\gamma</math></i>	F	GCTGTTATGGGTGAAACTCTG	[108]
	R	GAATAATAAGGTGGAGATGCAGG	
<i>Pepck</i>	F	AGTCATCATCACCCAAGAGC	[107]
	R	GGGATGACATACATGGTGC	
<i>Rplp0</i>	F	AACATCTCCCCCTTCTCCTT	[106]
	R	GAAGGCCTTGACCTTTTCAG	
<i>Srebp</i>	F	CACTTCATCAAGGCAGACTC	[106]
	R	CGGTAGCGCTTCTCAATGGC	

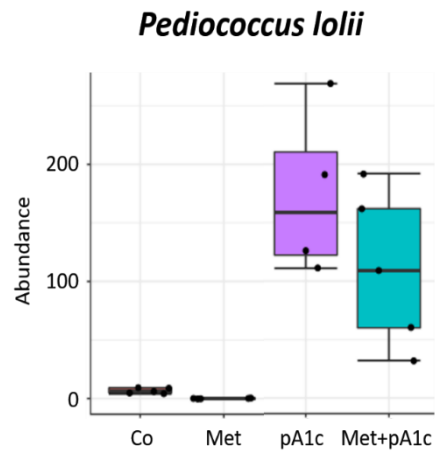
*Acox*: acyl-coenzyme A oxidase; *Cpt1*: carnitine palmitoyltransferase 1; *Fasn*: fatty acid synthase; *Gck*: glucokinase; *G6Pase*: glucose 6 phosphatase; *Il-1 $\beta$* : interleukine-1 $\beta$ ; *Il-6*: interleukin-6; *Ppara*: peroxisome proliferator-activated receptor  $\alpha$ ; *Ppar $\gamma$* : peroxisome proliferator-activated receptor  $\gamma$ ; *Pepck*: phosphoenolpyruvate carboxykinase; *Rplp0*: ribosomal protein P0; *Srebp*: sterol regulatory element-binding protein.



**Figure S1.** Average food intake in all the experimental groups during the study.



**Figure S2.** Abundance of (A) upregulated and (B) downregulated taxa.



**Figure S3.** Abundance (n° of reads) of *Pediococcus lolii* in the study groups.