

SUPPLEMENTARY MATERIAL

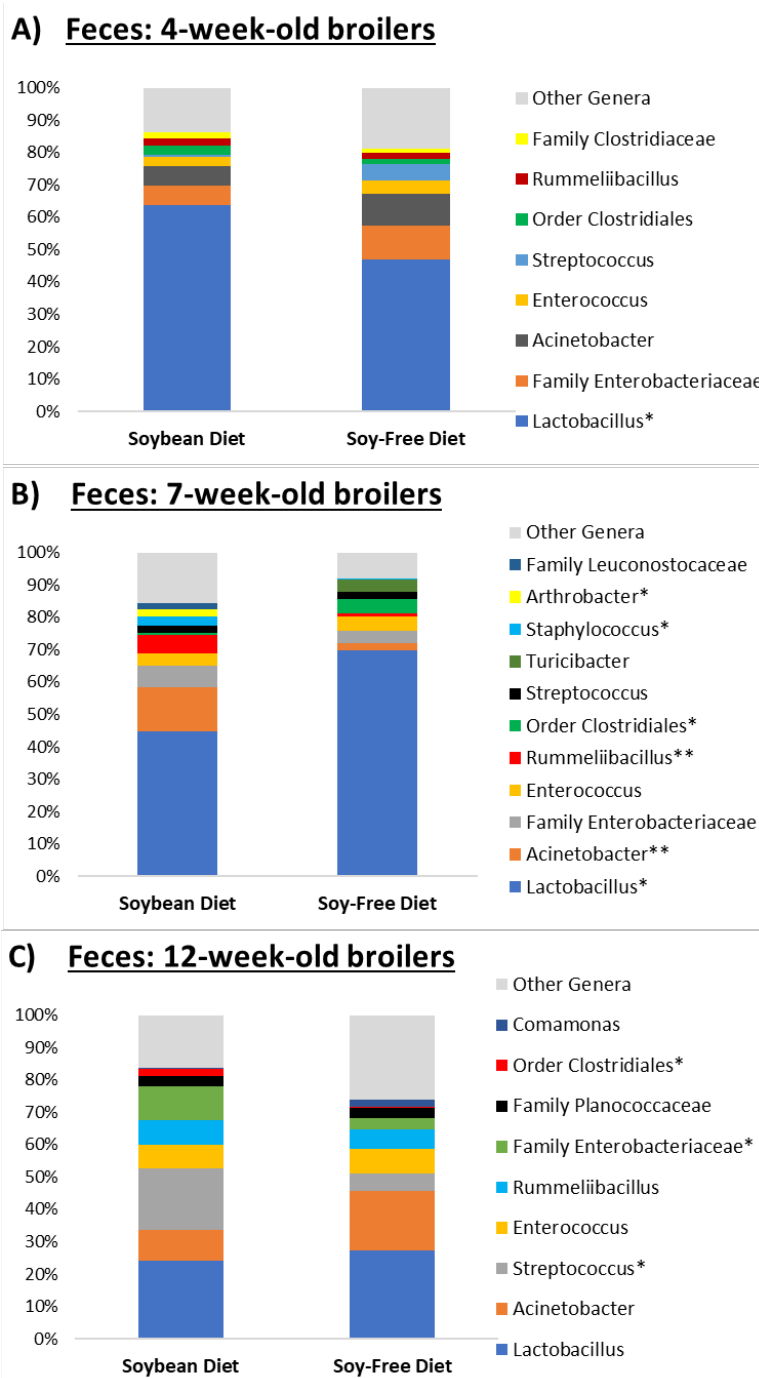


Figure S1. Relative abundance of bacterial genera of broilers fed Soybean or Soy-Free Diets, at different stages of their lifecycle. Bacteria not identified at the genus level are presented at the subsequent taxonomic level (family or order). A) Fecal samples obtained from 4-week-old pasture-raised broilers; **B)** Fecal samples obtained from 7-week-old pasture-raised broilers; **C)** Fecal samples obtained from 12-week-old pasture-raised broilers.

* Differences were significant at the $P \leq 0.05$ level.

** Differences were significant at the $P \leq 0.001$ level.

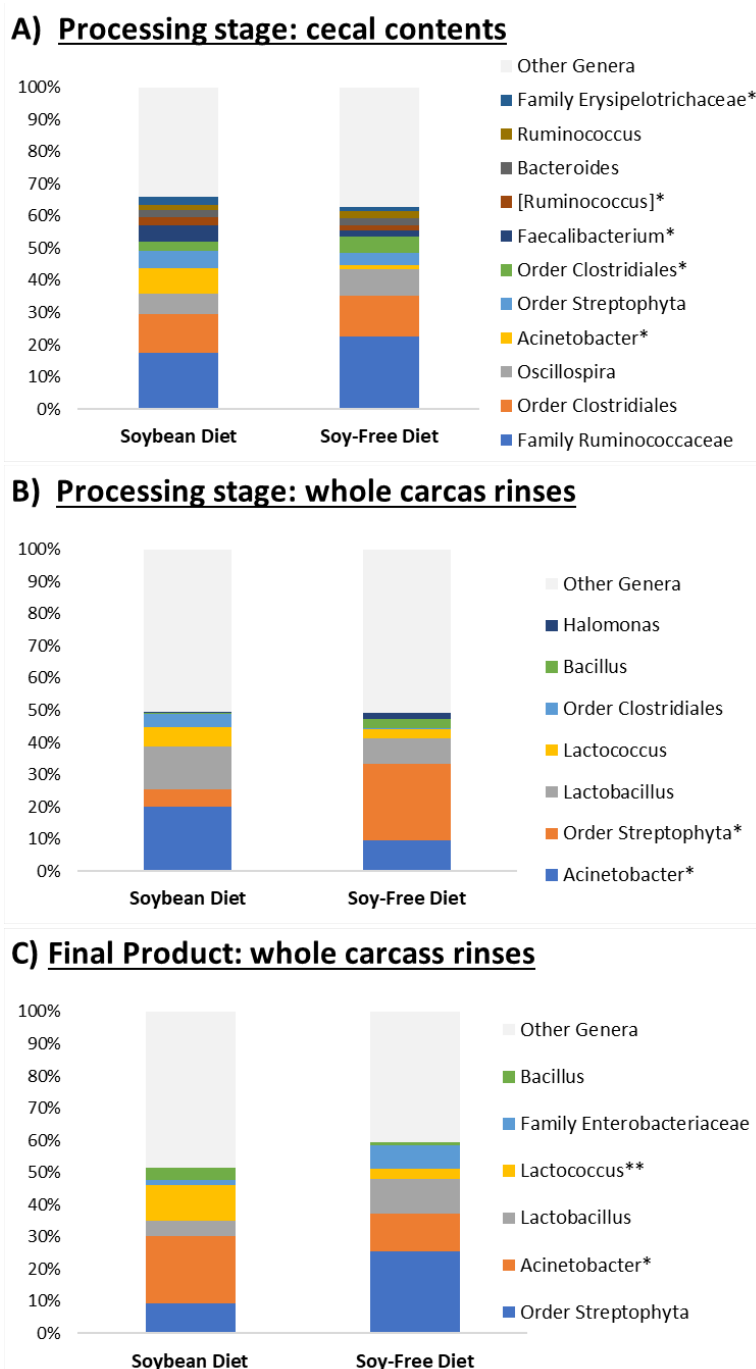


Figure S2. Relative abundance of bacterial genera of broilers fed Soybean or Soy-Free Diets, at different stages of their lifecycle. Bacteria not identified at the genus level are presented at the subsequent taxonomic level (family or order). A) Cecal samples obtained during the processing stage; B) Whole carcass rinses obtained during the processing stage; C) Whole carcass rinses obtained on the final product.

* Differences were significant at the $P \leq 0.05$ level.

** Differences were significant at the $P \leq 0.001$ level.

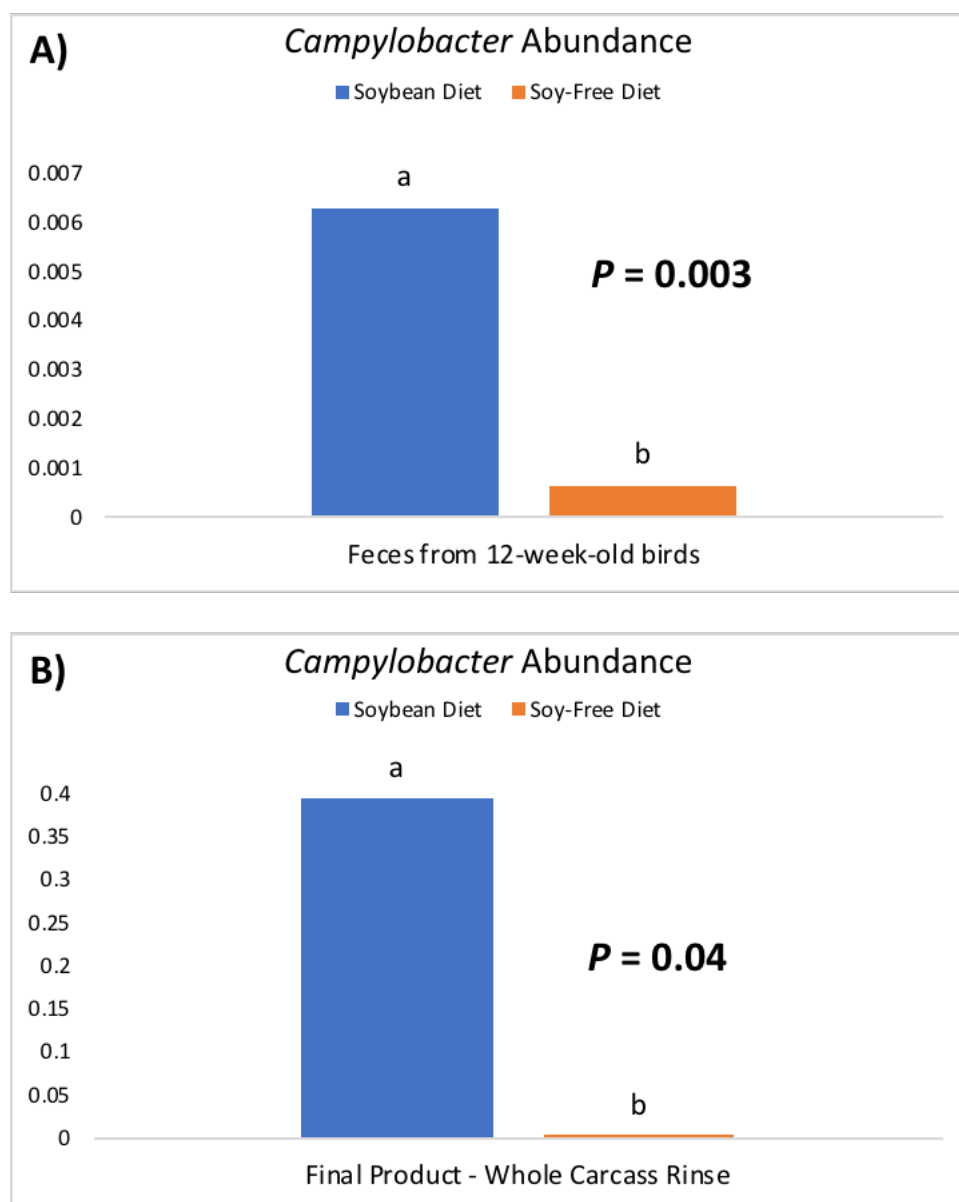


Figure S3. Relative abundance of *Campylobacter* in samples from broilers fed Soybean or Soy-Free Diets. A) Fecal samples from 12-week-old birds ($P = 0.003$); B) Whole carcass rinse from the final product ($P = 0.04$).

Table S1. Major bacterial phyla ($\geq 0.5\%$ of all OTUs recovered) distributions for pasture-raised broilers fed soybean or soy-free diets at different stages along the farm-to-fork continuum: fecal samples from 4, 7, and 12-week-old broilers.

Sample Type / Phylum	Type of Feed ¹		<i>P</i> -value ²
	SB	SF	
<u>Feces from 4-week-old birds</u>			
<i>Firmicutes</i>	80.5	68.1	0.12
<i>Proteobacteria</i>	15.0	24.4	0.21
<i>Actinobacteria</i>	2.3	3.8	0.14
<i>Bacteroidetes</i>	1.2	2.8	0.16
<u>Feces from 7-week-old birds</u>			
<i>Firmicutes</i>	68.8	91.4	0.0001
<i>Proteobacteria</i>	24.0	6.9	0.001
<i>Actinobacteria</i>	3.3	0.5	0.002
<i>Bacteroidetes</i>	3.2	0.7	0.02
<u>Feces from 12-week-old birds</u>			
<i>Firmicutes</i>	73.6	62.5	0.25
<i>Proteobacteria</i>	21.8	27.2	0.47
<i>Actinobacteria</i>	2.5	4.9	0.05
<i>Bacteroidetes</i>	1.2	4.5	0.04

¹ SB = Soybean-based feed; SF = Soy-free feed.

² $P \leq 0.05$ are bolded to highlight significant differences between diets.

Table S2. Major bacterial phyla ($\geq 0.5\%$ of all OTUs recovered) distributions for pasture-raised broilers fed soybean or soy-free diets at different stages along the farm-to-fork continuum: cecal contents and whole carcass rinses.

Sample Type / Phylum	Type of Feed ¹		P-value ²
	SB	SF	
<u>Processing Stage - Cecal Contents</u>			
<i>Firmicutes</i>	67.0	71.5	0.50
<i>Proteobacteria</i>	14.2	6.0	0.02
<i>Cyanobacteria</i>	5.7	5.2	0.89
<i>Bacteroidetes</i>	3.4	5.9	0.25
<i>Actinobacteria</i>	3.8	2.9	0.34
<i>Tenericutes</i>	1.6	1.8	0.57
<i>Chlamydiae</i>	0.1	2.1	0.09
<i>Euryarchaeota</i>	0.6	1.0	0.15
<i>Verrucomicrobia</i>	0.7	0.3	0.25
<u>Processing Stage - Whole Carcass Rinse</u>			
<i>Proteobacteria</i>	35.3	31.4	0.62
<i>Firmicutes</i>	37.0	23.5	0.13
<i>Cyanobacteria</i>	6.1	23.9	0.05
<i>Bacteroidetes</i>	6.7	6.5	0.95
<i>Actinobacteria</i>	4.0	7.3	0.12
<i>Acidobacteria</i>	3.9	2.1	0.64
<i>Tenericutes</i>	0.7	0.1	0.34
<i>Verrucomicrobia</i>	0.7	0.6	0.79
<i>Gemmatimonadetes</i>	0.8	0.2	0.44
OD1	0.7	0.4	0.43
<u>Final Product - Whole Carcass Rinse</u>			
<i>Proteobacteria</i>	39.7	33.1	0.44
<i>Firmicutes</i>	29.5	25.2	0.63
<i>Cyanobacteria</i>	9.8	25.8	0.22
<i>Actinobacteria</i>	6.9	5.3	0.37
<i>Bacteroidetes</i>	6.5	4.9	0.45
<i>Acidobacteria</i>	1.0	0.7	0.46
OD1	1.0	0.2	0.001
<i>Tenericutes</i>	0.1	0.9	0.36

¹ SB = Soybean-based feed; SF = Soy-free feed.

² $P \leq 0.05$ are bolded to highlight significant differences between diets.

Table S3. Predicted functional differences between the soy (SB) and soy-free (SF) diets in the fecal samples collected at 4, 7, and 12-week old birds*.

KEGG Pathways	Feces from 4-weeks			Feces from 7-weeks			Feces from 12-weeks		
	SB	SF	P-value	SB	SF	P-value	SB	SF	P-value
Metabolism; Amino Acid Metabolism	100.0%	+ 9.9%	0.62	100.0%	- 22.6%	0.54	100.0%	+ 2.9%	0.89
Metabolism; Carbohydrate Metabolism		+ 3.1	0.86		- 6.4%	0.86		- 4.4%	0.82
Metabolism; Lipid Metabolism		+ 6.4%	0.76		- 19.7%	0.59		+ 8.1%	0.69
Metabolism; Biosynthesis of Other Secondary Metabolites		+ 6.3%	0.72		- 16.2%	0.67		+ 0.3%	0.99
Metabolism; Metabolism of Terpenoids and Polyketides		+ 4.0%	0.84		- 17.9%	0.62		+ 7.3%	0.71
Metabolism; Xenobiotics Biodegradation and Metabolism		+ 13.0%	0.61		- 30.0%	0.42		+ 23.5%	0.31
Cellular Processes; Cell Motility		+ 46.0%	0.24		- 35.9%	0.36		- 8.6%	0.70
Cellular Processes; Transport and Catabolism		+ 33.5%	0.27		- 47.5%	0.24		+ 17.5%	0.50
Genetic Information Processing; Transcription		+ 2.9%	0.87		- 4.8%	0.89		- 7.8%	0.68
Organismal Systems; Environmental Adaptation		+ 0.8%	0.96		- 4.9%	0.89		+ 2.7%	0.89
Environmental Information Processing; Membrane Transport		+ 8.6%	0.65		- 5.3%	0.88		- 10.9%	0.56
Environmental Information Processing; Signaling Molecules and Interaction		- 9.6%	0.55		+ 14.3%	0.70		- 2.7%	0.89

* Values observed in the soy diet were set as the standard (100%).

Table S4. Predicted functional differences between the soy (SB) and soy-free (SF) diets in the cecal contents and whole carcass rinses*.

KEGG Pathways	Cecal contents from processing			WCR ¹ from processing			WCR ¹ on the final product		
	SB	SF	<i>P</i> -value	SB	SF	<i>P</i> -value ²	SB	SF	<i>P</i> -value
Metabolism; Amino Acid Metabolism	100.0%	+ 10.0%	0.39	100.0%	+ 176.6%	0.03	100.0%	+ 75.5%	0.10
Metabolism; Carbohydrate Metabolism		+ 11.6%	0.34		+ 166.2%	0.04		+ 82.2%	0.08
Metabolism; Lipid Metabolism		+ 12.8%	0.26		+ 166.0%	0.03		+ 72.0%	0.09
Metabolism; Biosynthesis of Other Secondary Metabolites		+ 8.7%	0.49		+ 232.2%	0.05		+ 112.9%	0.11
Metabolism; Metabolism of Terpenoids and Polyketides		+ 10.3%	0.37		+ 205.6%	0.04		+ 86.6%	0.11
Metabolism; Xenobiotics Biodegradation and Metabolism		+ 1.9%	0.86		+ 177.0%	0.02		+ 63.4%	0.09
Cellular Processes; Cell Motility		+ 21.4%	0.16		+ 157.8%	0.03		+ 83.7%	0.08
Cellular Processes; Transport and Catabolism		+ 10.1%	0.49		+ 169.5%	0.03		+ 57.7%	0.15
Genetic Information Processing; Transcription		+ 15.8%	0.26		+ 137.4%	0.04		+ 72.3%	0.08
Organismal Systems; Environmental Adaptation		+ 18.5%	0.23		+ 127.5%	0.03		+ 59.4%	0.10
Environmental Information Processing; Membrane Transport		+ 11.1%	0.38		+ 164.0%	0.05		+ 91.2%	0.07
Environmental Information Processing; Signaling Molecules and Interaction		+ 17.2%	0.19		+ 164.0%	0.04		+ 85.9%	0.11

* Values observed in the soy diet were set as the standard (100%).

¹ Whole carcass rinses.

² $P \leq 0.05$ are bolded to highlight significant differences between diets.