

### Supplemental material

<b>Phylum</b>	<b>Genera</b>	<b>Relative abundance (%) ± SD</b>
Bacteroidetes	<i>Bacteroides</i>	7.74 ± 4.8
	<i>Parabacteroides</i>	0.39 ± 0.2
	<i>Prevotella</i>	1.56 ± 1.2
	<i>Odoribacter</i>	0.07 ± 0.1
	<i>CF231</i>	3.75 ± 2.2
	<i>[Prevotella]</i>	5.41 ± 3.0
Firmicutes	<i>Lactobacillus</i>	0.20 ± 0.1
	<i>Coprococcus</i>	1.59 ± 1.7
	<i>Oscillospira</i>	8.91 ± 3.8
	<i>Ruminococcus</i>	1.05 ± 1.0
	<i>Allobaculum</i>	0.07 ± 0.0
Proteobacteria	<i>Sutterella</i>	0.7 ± 0.6
	<i>Desulfovibrio</i>	2.05 ± 1.4
	<i>Flexispira</i>	0.24 ± 0.1
Spirochaetes	<i>Treponema</i>	3.51 ± 1.2

N = 10 rats per treatment

**Table S2. Prevalence and relative abundance (%) of the phyla presents in the cecal content**

Phylum	C		C/AvPPE		HP		HP/AvPPE		p-value*
	Prev.	Mean ± SD	Prev.	Mean ± SD	Prev.	Mean ± SD	Prev.	Mean ± SD	
Bacteroidetes	1.0	43.31 ± 9.6	1.0	51.93 ± 13.4	1.0	43.45 ± 10.9	1.0	54.21 ± 9.3	NS
Firmicutes	1.0	40.03 ± 9.7	1.0	33.07 ± 9.2	1.0	46.17 ± 10.1	1.0	35.48 ± 7.3	0.02
Proteobacteria	1.0	6.71 ± 3.7	1.0	7.22 ± 5.1	1.0	7.19 ± 2.9	1.0	5.70 ± 2.5	NS
Spirochaetes	1.0	3.51 ± 1.2	1.0	4.61 ± 3.1	1.0	1.19 ± 1.0	1.0	3.18 ± 3.3	0.04
Actinobacteria	1.0	0.14 ± 0.1	1.0	0.42 ± 0.2	1.0	0.44 ± 0.4	1.0	0.2 ± 0.1	0.04
Verrucomicrobia	1.0	0.19 ± 0.2	1.0	0.30 ± 0.2	0.9	0.35 ± 0.4	0.9	0.15 ± 0.1	NS
Cyanobacteria	1.0	0.14 ± 0.1	0.8	0.21 ± 0.3	0.9	0.19 ± 0.2	1.0	0.21 ± 0.1	NS
TM7	0.9	0.10 ± 0.1	1.0	0.18 ± 0.3	0.9	0.04 ± 0.0	0.8	0.05 ± 0.1	NS
Tenericutes	1.0	0.12 ± 0.1	0.7	0.10 ± 0.1	0.8	0.05 ± 0.0	0.8	0.02 ± 0.0	NS
Fibrobacteres	0.6	0.01 ± 0.0	0.8	0.06 ± 0.1	0.0	0.00 ± 0.0	0.1	0.00 ± 0.0	<0.001

Prev = prevalence; N = 10 rats per treatment; NS = not significant

\* One-way ANOVA or Kruskal-Wallis test

**Table S3. Prevalence and relative abundance (%) of the families presents in the cecal content**

Family	C		C/AvPPE		HP		HP/AvPPE		p-value*
	Prev.	Mean ± SD	Prev.	Mean ± SD	Prev.	Mean ± SD	Prev.	Mean ± SD	
Ruminococcaceae	1.0	15.13 ± 4.8	1.0	14.38 ± 5.1	1.0	22.25 ± 5.9	1.0	16.35 ± 5.2	0.01
S24-7	1.0	18.51 ± 9.8	1.0	17.25 ± 9.5	1.0	14.84 ± 6.3	1.0	11.38 ± 4.6	NS
[Paraprevotellaceae]	1.0	9.24 ± 3.4	1.0	17.30 ± 9.5	1.0	9.25 ± 4.5	1.0	17.21 ± 5.8	0.003
Bacteroidaceae	1.0	7.74 ± 4.8	1.0	9.15 ± 4.3	1.0	13.23 ± 4.5	1.0	17.04 ± 5.9	<0.001
Desulfovibrionaceae	1.0	4.89 ± 2.4	1.0	3.47 ± 1.5	1.0	5.49 ± 2.3	1.0	3.56 ± 1.8	NS
Veillonellaceae	1.0	5.04 ± 2.7	1.0	4.10 ± 2.5	1.0	4.20 ± 2.8	1.0	3.55 ± 2.6	NS
Lachnospiraceae	1.0	3.93 ± 2.3	1.0	4.12 ± 2.3	1.0	3.68 ± 2.5	1.0	2.49 ± 1.2	NS
Spirochaetaceae	1.0	3.51 ± 1.2	1.0	4.61 ± 3.1	1.0	1.19 ± 1.0	1.0	3.17 ± 3.3	0.04
Prevotellaceae	1.0	1.63 ± 1.3	1.0	1.19 ± 1.1	1.0	0.49 ± 0.4	1.0	0.88 ± 0.3	NS
Porphyromonadaceae	1.0	0.39 ± 0.2	1.0	0.76 ± 0.6	1.0	0.65 ± 0.4	1.0	0.76 ± 0.4	NS
RF16	0.9	0.30 ± 0.4	1.0	0.74 ± 0.8	1.0	0.80 ± 0.7	1.0	0.51 ± 0.2	NS
Alcaligenaceae	1.0	0.70 ± 0.6	1.0	0.37 ± 0.3	1.0	0.45 ± 0.4	1.0	0.53 ± 0.3	NS
Lactobacillaceae	1.0	0.20 ± 0.1	9.0	0.26 ± 0.3	9.0	1.15 ± 1.1	1.0	0.14 ± 0.1	0.00
Helicobacteraceae	1.0	0.32 ± 0.2	1.0	0.37 ± 0.4	1.0	0.37 ± 0.4	1.0	0.49 ± 0.3	NS
Christensenellaceae	1.0	0.35 ± 0.2	1.0	0.29 ± 0.2	1.0	0.23 ± 0.1	1.0	0.25 ± 0.2	NS
Coriobacteriaceae	1.0	0.08 ± 0.1	1.0	0.35 ± 0.2	1.0	0.39 ± 0.4	1.0	0.18 ± 0.1	NS
[Odoribacteraceae]	1.0	0.12 ± 0.1	1.0	0.27 ± 0.2	1.0	0.36 ± 0.3	1.0	0.25 ± 0.1	NS
RFP12	1.0	0.19 ± 0.2	1.0	0.30 ± 0.2	0.9	0.35 ± 0.4	0.9	0.15 ± 0.1	NS
F16	0.9	0.10 ± 0.1	1.0	0.18 ± 0.3	0.9	0.04 ± 0.0	0.8	0.05 ± 0.1	NS
Rikenellaceae	1.0	0.08 ± 0.0	1.0	0.04 ± 0.0	1.0	0.10 ± 0.1	1.0	0.10 ± 0.1	NS
Clostridiaceae	1.0	0.05 ± 0.0	1.0	0.08 ± 0.1	1.0	0.09 ± 0.0	1.0	0.10 ± 0.1	NS
[Mogibacteriaceae]	1.0	0.06 ± 0.0	1.0	0.13 ± 0.1	1.0	0.07 ± 0.1	1.0	0.05 ± 0.0	NS
p-2534-18B5	1.0	0.09 ± 0.1	1.0	0.08 ± 0.1	0.9	0.09 ± 0.1	0.8	0.04 ± 0.0	NS
Erysipelotrichaceae	1.0	0.09 ± 0.1	1.0	0.09 ± 0.0	1.0	0.06 ± 0.0	0.9	0.03 ± 0.0	0.02
Bifidobacteriaceae	0.8	0.06 ± 0.1	0.9	0.06 ± 0.1	0.6	0.04 ± 0.0	0.5	0.01 ± 0.0	NS
Fibrobacteraceae	0.6	0.01 ± 0.0	0.8	0.06 ± 0.1	0.0	0.00 ± 0.0	0.1	0.00 ± 0.0	<0.001

Prev = prevalence; N = 10 rats per treatment; NS = not significant

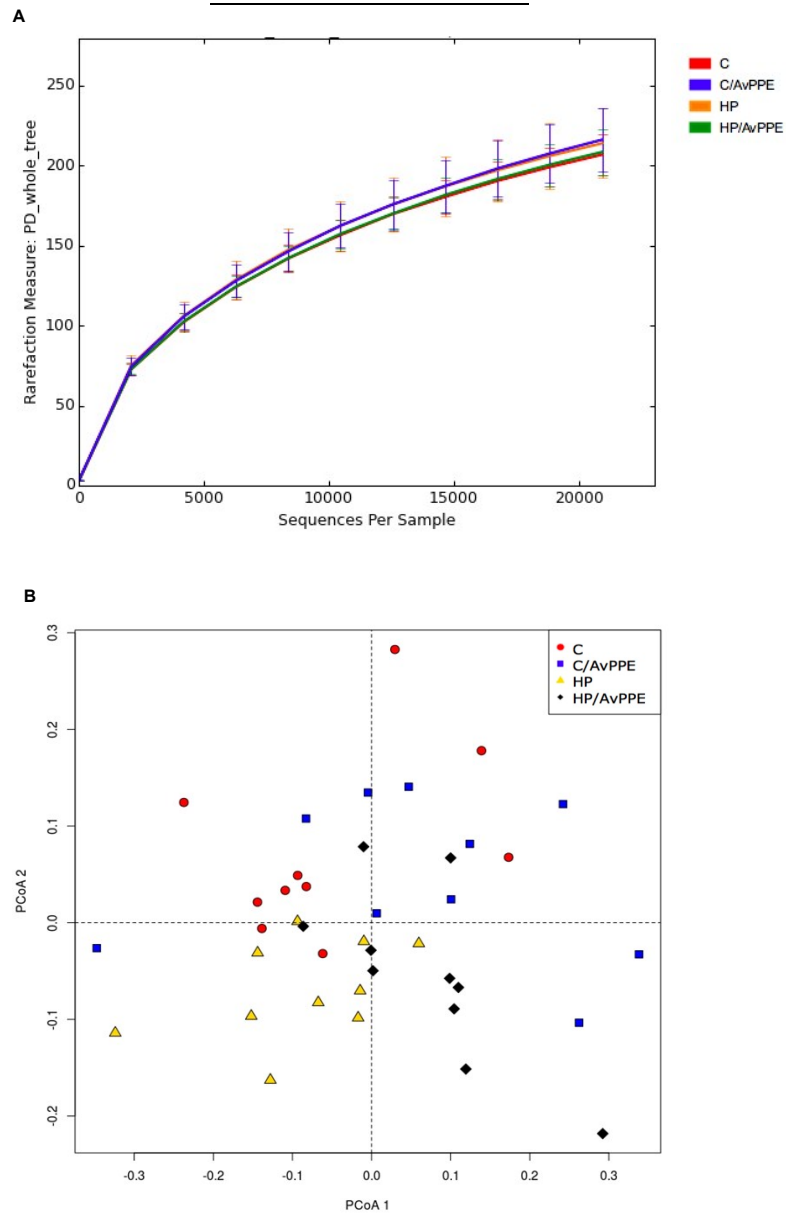
\* One-way ANOVA or Kruskal-Wallis test

**Table S4. Prevalence and relative abundance (%) of the genera presents in the cecal content**

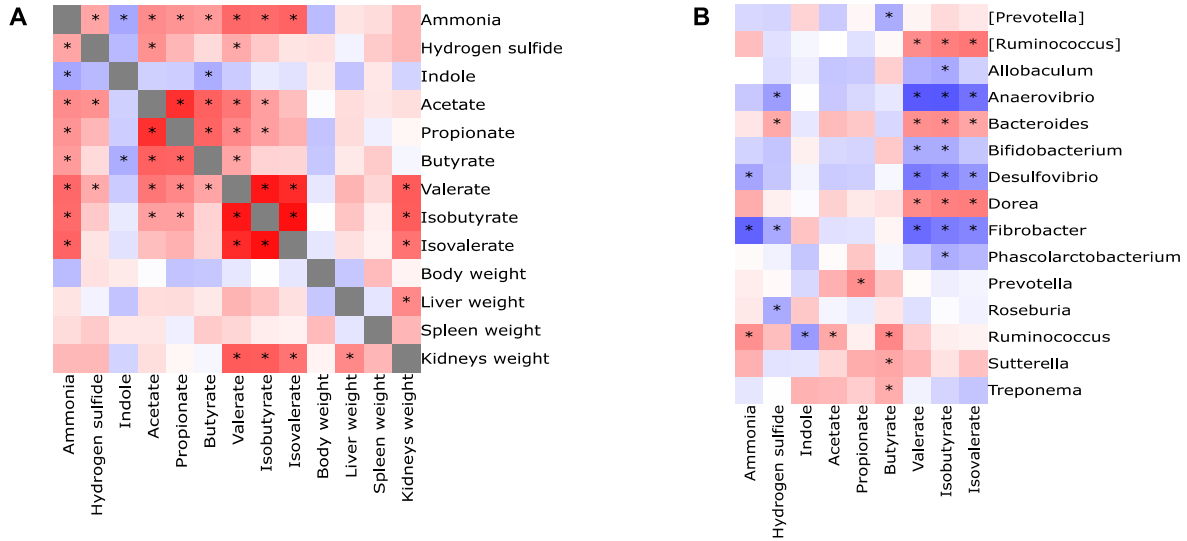
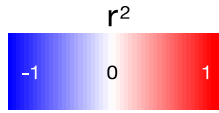
Genus	C		C/AvPPE		HP		HP/AvPPE		p-value*
	Prev.	Mean ± SD	Prev.	Mean ± SD	Prev.	Mean ± SD	Prev.	Mean ± SD	
<i>Bacteroides</i>	1.0	7.74 ± 4.8	1.0	9.14 ± 4.3	1.0	13.22 ± 4.5	1.0	17.03 ± 5.9	<0.001
<i>Oscillospira</i>	1.0	8.91 ± 3.8	1.0	10.30 ± 4.3	1.0	10.36 ± 2.0	1.0	10.74 ± 4.2	NS
[ <i>Prevotella</i> ]	1.0	5.41 ± 3.0	1.0	9.68 ± 4.2	1.0	4.05 ± 3.2	1.0	11.27 ± 4.1	<0.001
<i>CF231</i>	1.0	3.75 ± 2.2	1.0	7.45 ± 7.1	1.0	5.10 ± 2.2	1.0	5.78 ± 2.5	NS
<i>Treponema</i>	1.0	3.51 ± 1.2	1.0	4.61 ± 3.1	1.0	1.19 ± 1.0	1.0	3.17 ± 3.3	0.04
<i>Ruminococcus</i>	1.0	1.05 ± 1.0	1.0	0.36 ± 0.2	1.0	3.02 ± 3.9	1.0	0.57 ± 0.4	0.02
<i>Desulfovibrio</i>	1.0	2.05 ± 1.4	1.0	1.60 ± 1.4	1.0	0.79 ± 0.4	1.0	0.46 ± 0.3	0.00
<i>Coprococcus</i>	1.0	1.59 ± 1.7	1.0	1.98 ± 1.9	1.0	0.50 ± 0.8	1.0	0.51 ± 0.6	NS
<i>Prevotella</i>	1.0	1.56 ± 1.2	1.0	1.09 ± 1.1	1.0	0.40 ± 0.4	1.0	0.74 ± 0.4	0.05
<i>Parabacteroides</i>	1.0	0.39 ± 0.2	1.0	0.74 ± 0.6	1.0	0.63 ± 0.4	1.0	0.75 ± 0.4	NS
<i>Sutterella</i>	1.0	0.70 ± 0.6	1.0	0.37 ± 0.3	1.0	0.45 ± 0.4	1.0	0.53 ± 0.3	NS
<i>Lactobacillus</i>	1.0	0.20 ± 0.1	9.0	0.26 ± 0.3	9.0	1.15 ± 1.1	1.0	0.14 ± 0.1	0.00
<i>Flexispira</i>	1.0	0.24 ± 0.1	1.0	0.22 ± 0.2	1.0	0.15 ± 0.1	1.0	0.30 ± 0.2	NS
<i>Phascolarctobacterium</i>	0.8	0.16 ± 0.2	0.7	0.42 ± 0.6	0.5	0.21 ± 0.3	0.6	0.11 ± 0.1	NS
<i>Odoribacter</i>	1.0	0.07 ± 0.1	1.0	0.18 ± 0.1	0.9	0.28 ± 0.3	1.0	0.17 ± 0.1	NS
<i>Dorea</i>	0.7	0.02 ± 0.0	0.7	0.00 ± 0.0	0.9	0.25 ± 0.3	1.0	0.09 ± 0.1	0.00
[ <i>Ruminococcus</i> ]	0.8	0.03 ± 0.0	1.0	0.03 ± 0.0	1.0	0.09 ± 0.0	1.0	0.10 ± 0.1	0.00
<i>Allobaculum</i>	1.0	0.07 ± 0.0	0.9	0.06 ± 0.1	1.0	0.05 ± 0.0	0.7	0.01 ± 0.0	0.02
<i>Bifidobacterium</i>	0.8	0.06 ± 0.1	0.9	0.06 ± 0.1	0.6	0.04 ± 0.0	0.5	0.01 ± 0.0	NS
<i>Roseburia</i>	0.9	0.05 ± 0.0	0.8	0.06 ± 0.1	0.9	0.03 ± 0.0	1.0	0.04 ± 0.0	NS
<i>Anaerovibrio</i>	0.9	0.10 ± 0.1	0.8	0.03 ± 0.0	0.5	0.01 ± 0.0	0.3	0.00 ± 0.0	0.00
<i>AF12</i>	0.7	0.01 ± 0.0	0.5	0.00 ± 0.0	0.6	0.02 ± 0.0	0.8	0.06 ± 0.1	NS
<i>Fibrobacter</i>	0.6	0.01 ± 0.0	0.8	0.06 ± 0.1	0.0	0.00 ± 0.0	0.1	0.00 ± 0.0	<0.001

Prev = prevalence; N = 10 rats per treatment; NS = not significant

\* One-way ANOVA or Kruskal-Wallis test



**Figure S1.** A: Rarefaction curves based on the phylogenetic diversity (PD) considering until 20,930 sequences per sample. B: Graph of principal coordinates based on Unifrac distance. Each point represents a sample of cecal content. N= 10 rats per treatment.



**Figure S2.** Heat map of the correlations between parameters measured in the cecal content. All the data were used for the analysis (all treatments for each parameter). The color indicates the value of the Spearman correlation coefficient. The asterisk indicates that the correlation is statistically significant ( $p < 0.05$ ). A: correlation between the metabolites of proteins and body weight and organ curves. B: correlation between the bacterial genera and metabolites of proteins.