

**Table S1.** Bacterial phyla detected in cecum content of mice administered saline (control) or *Lactobacillus casei* strains<sup>b</sup>.

Taxon	Percentage (mean ± SE) <sup>bc</sup>							
	Control	12A	32G	ATCC334	BL23	CRF28	M36	UW1
<i>Bacteroidetes</i>	31.8 ± 8.5	37.2 ± 14.7	29.2 ± 4.8	35.2 ± 7.4	<b>19.8 ± 10.1</b>	36.5 ± 9.1	37.6 ± 9.4	<b>20.5 ± 6.2</b>
<i>Firmicutes</i>	65.7 ± 8.2	61.0 ± 14.4	68.7 ± 4.0	63.2 ± 7.2	<b>79.5 ± 10.1</b>	61.0 ± 9.6	60.2 ± 9.6	<b>78.0 ± 6.1</b>
<i>Tenericutes</i>	1.8 ± 1.8	1.5 ± 0.6	1.0 ± 1.4	1.3 ± 0.6	<b>0.3 ± 0.3</b>	1.5 ± 1.0	1.2 ± 1.4	<b>0.6 ± 0.4</b>
<i>Proteobacteria</i>	0.1 ± 0.3	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
<i>Verrucomicrobia</i>	0.1 ± 0.2	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	BQL	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
<i>Bacteria;Other</i>	0.4 ± 0.2	0.4 ± 0.1	<b>1.0 ± 0.3</b>	<b>0.2 ± 0.1</b>	0.4 ± 0.1	<b>1.0 ± 0.4</b>	<b>0.9 ± 0.2</b>	<b>1.0 ± 0.2</b>
<i>Actinobacteria</i>	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
<i>Deferribacteres</i>	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	BQL	0.0 ± 0.0	BQL	0.0 ± 0.0	BQL
<i>Cyanobacteria</i>	0.0 ± 0.0	0.0 ± 0.0	BQL	BQL	BQL	BQL	0.0 ± 0.0	BQL
<i>TM7</i>	0.0 ± 0.0	BQL	0.0 ± 0.0	BQL	BQL	BQL	BQL	BQL
<i>Thermi</i>	BQL	BQL	0.0 ± 0.0	BQL	0.0 ± 0.0	BQL	BQL	0.0 ± 0.0
<b>Number of alterations<sup>d</sup></b>	-	-	1	1	3	1	1	4

<sup>a</sup>The detection limit was 0.00009 and this value was used to calculate the p-value.

<sup>b</sup>Mice were administered 1 dose (10<sup>8</sup> CFU/mouse/day) daily of *L. casei* strains for 1 week and sacrificed 3.5h after the last dose.

<sup>c</sup>Phyla that differ from control within each group are shown in bold (p≤0.05).

<sup>d</sup>The number of genera that differed from the control for that treatment.

IS: Incertae Sedis.

BQL: Below quantifiable limit.