

**Supplementary Table S1.** Formula of commercial diet.

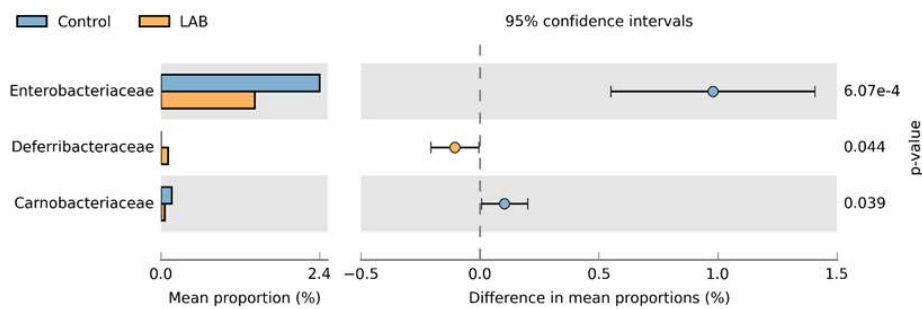
Ingredient	%
Fish meal	25
Casein	25
Dextrin	5
Starch	10
Lecithin	5
Fish oil	5
Vitamin mixture	3
Mineral mixture	3

**Supplementary Table S2.** The characteristics of different lactic acid bacteria.

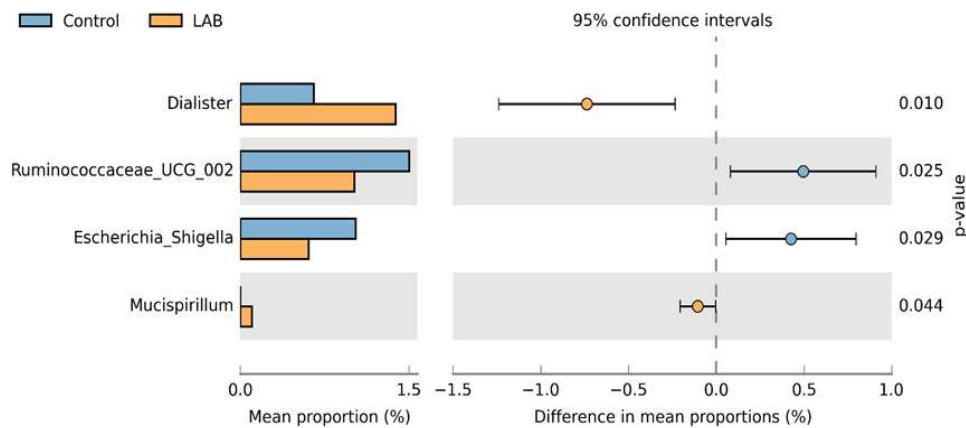
Strains	Survival at pH 2.0 (%)	Survival at 0.3% bile salts (%)	Absorption rate (%)
<i>L. acidophilus</i> (BCRC10695)	0.39 ± 0.07	0.00 ± 0.00	8.28 ± 1.11
<i>L. paracasei</i> subsp. <i>Paracasei</i> (BCRC14023)	0.05 ± 0.00	0.53 ± 0.08	0.12 ± 0.03
<i>L. reuteri</i>	36.88 ± 2.42	3.99 ± 0.07	3.35 ± 0.63

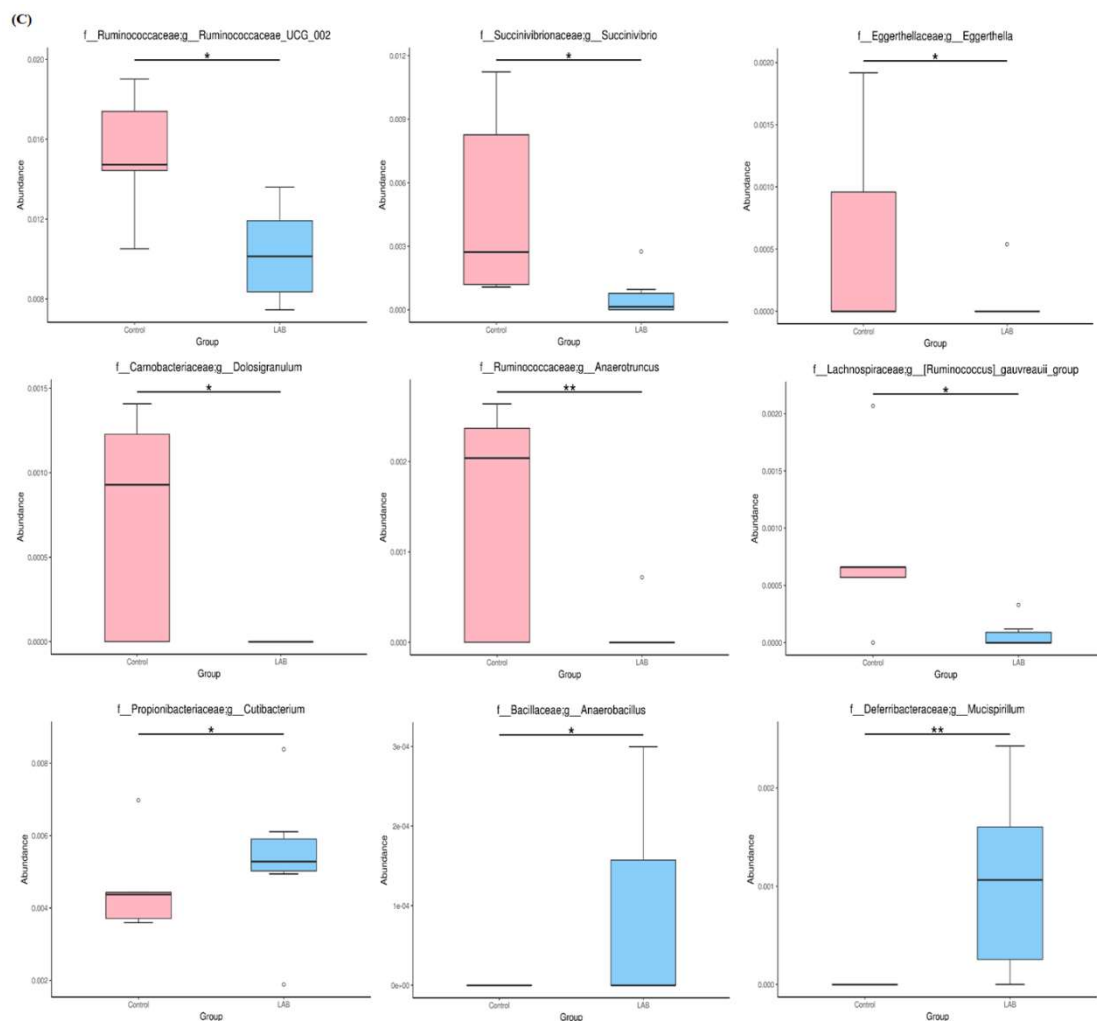
Data were shown as mean ± SD (*n* =3).

#### (A) Family



#### (B) Genus





**Supplementary Figure S1.** Statistical analysis of the gut microbiota of *O. fasciatus*. Bar chart of species differences between groups. Welch's *t*-test was used to show species that were significantly different ( $p < 0.05$ ) at the (A) family and (B) genus levels. (C) Relative abundance of the gut microbiota in *O. fasciatus* administered the LAB-fermented diet.