

## Supplementary Material

### Effects of Habitual Dietary Change on the Gut Microbiota and Health of Silkworms

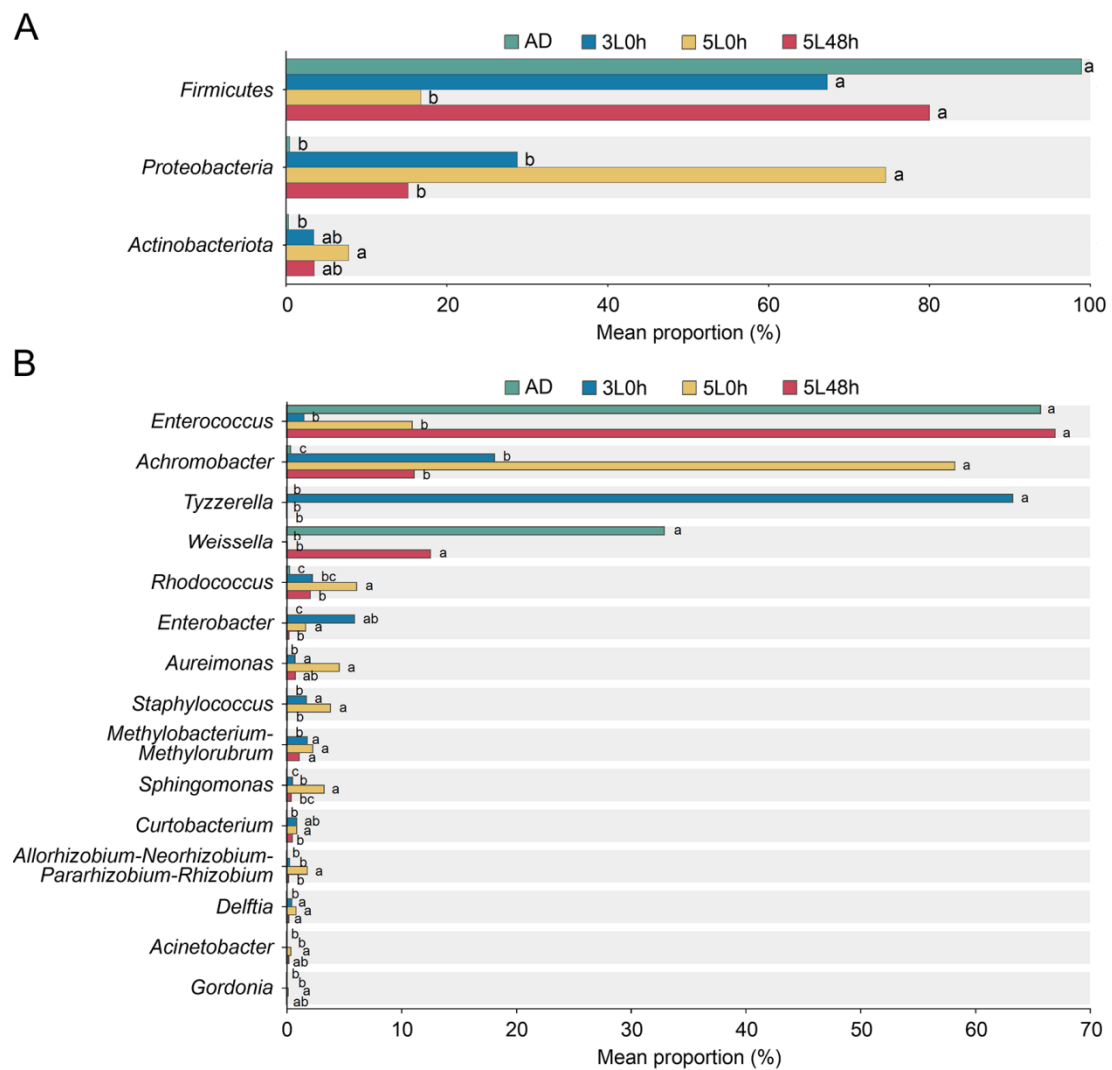
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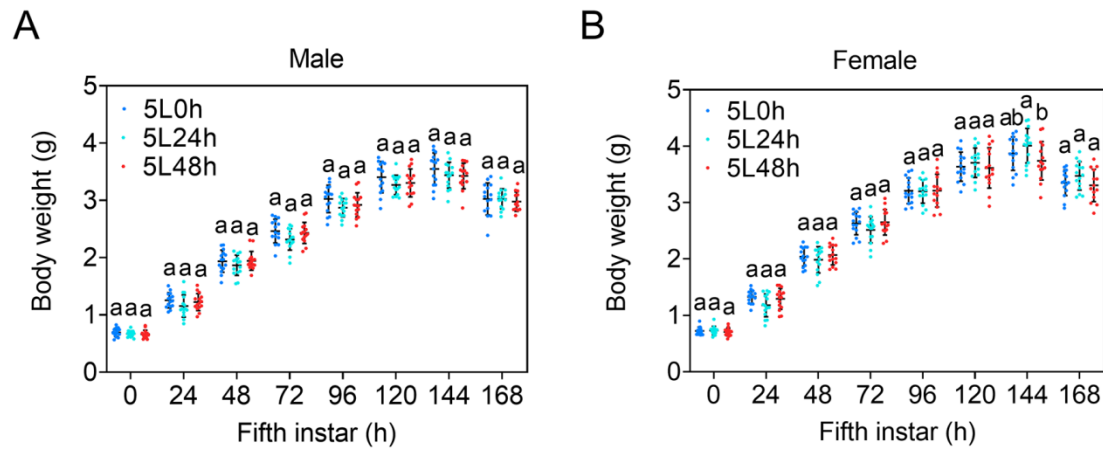
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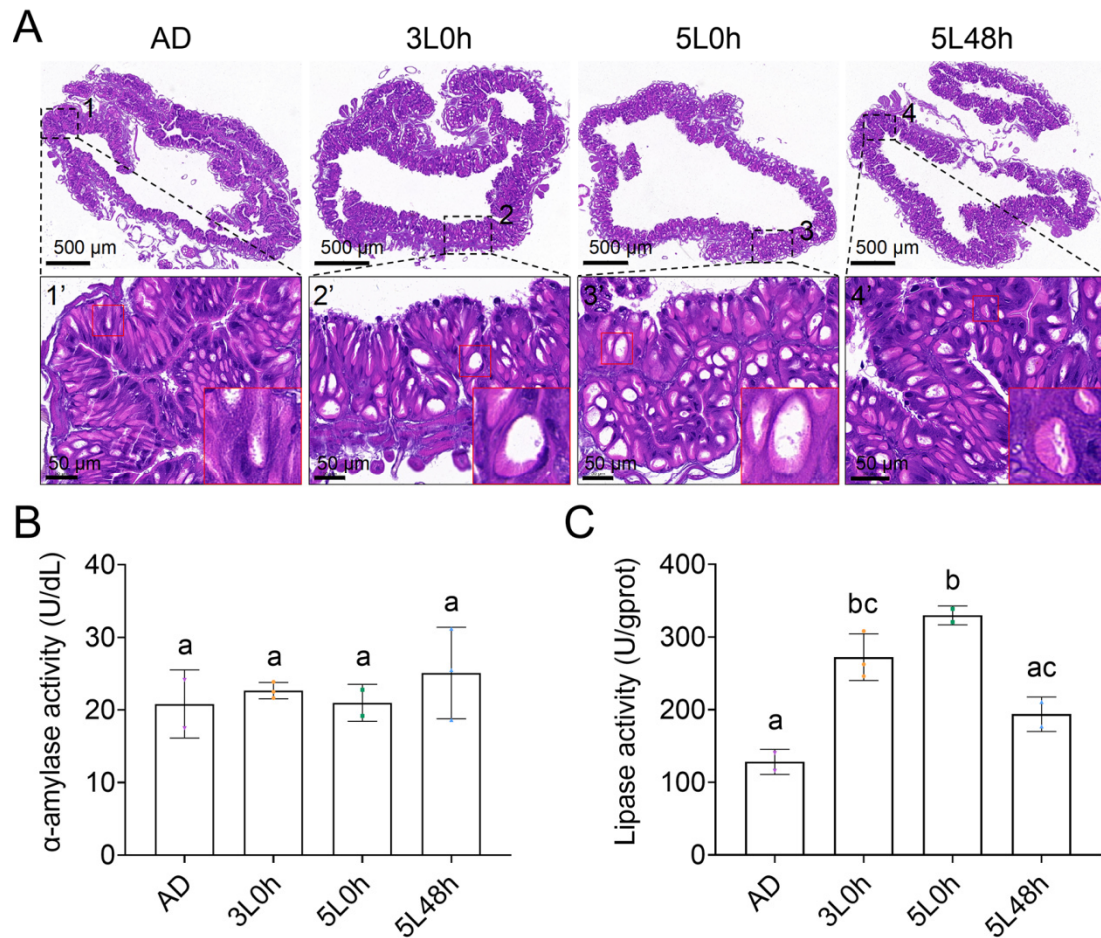
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**Figure S1.** Differential analysis of microbial abundance in silkworms under different dietary patterns. (A-B) Species with abundance differences at the phylum level (A) and genus level (B) in the microbial communities of different groups. A  $P$  value  $< 0.05$  indicated significant differences between groups, as shown with different letters.



**Figure S2.** Differences in body weights of larvae with different dietary patterns. **(A-B)** Effects of different dietary transition timing during the fifth instar on the body weights of male and female larvae.  $n = 15$ . **A**, Male ( $F = 0.534$ ;  $df = 14, 333$ ;  $P = 0.913$ ). **B**, Female ( $F = 1.567$ ;  $df = 14, 335$ ;  $P = 0.087$ ). Two-way ANOVA. A  $P$  value  $< 0.05$  indicated significant differences between groups, as shown with different letters.



**Figure S3.** Differences in the digestion and absorption of larvae with different dietary patterns. **(A)** Hematoxylin–eosin staining image of midgut tissue sections. The midgut tissues came from silkworms at hour 72 of the fifth instar. 1, 2, 3 and 4 are partially enlarged images. **(B-C)** Digestive enzyme activity of intestinal fluid.  $n = 3$ , with ten individuals per group. **B**,  $\alpha$ -amylase ( $F = 0.547$ ;  $df = 3, 6$ ;  $P = 0.668$ ). **C**, Lipase ( $F = 25.90$ ;  $df = 3, 5$ ;  $P = 0.002$ ). Two-way ANOVA. A  $P$  value  $< 0.05$  indicated significant differences between groups, as shown with different letters.