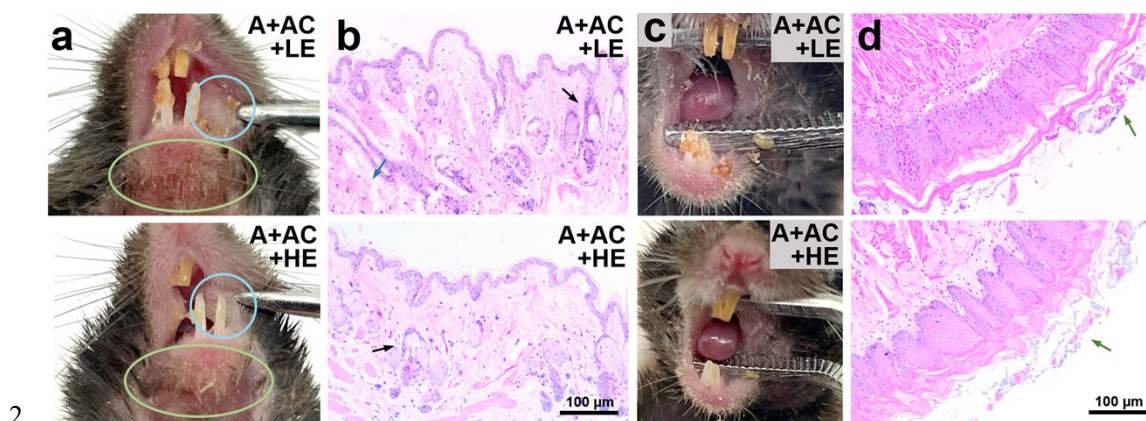1 **Supplementary information**

3 **Figure S1. Effects of EGCG on cheek pouch and tongue inflammation in the germ**

4 **reduced mice.** Representative (a) photographs and (b) H&E staining images of mice

5 cheek pouches in different treatment groups. Representative (c) photographs and (d)

6 H&E staining images of mice tongues in different treatment groups. The blue and green

7 circles indicate ulceration and swelling, respectively. The green, blue, and black arrows
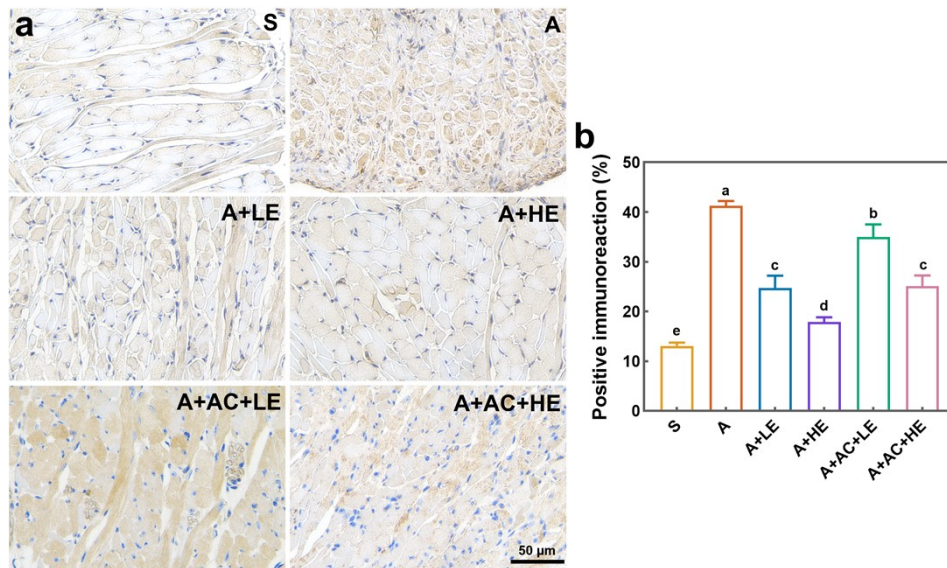
8 denote the destruction of the exfoliated cuticle, muscle disorder, and hyperplasia of

9 gland acinar cells, respectively. A+AC+LE, acetic acid induced inflammation +

10 antibiotic cocktail treated + 2.5 mg/mL EGCG treated group; A+AC+HE, acetic acid

11 induced inflammation + antibiotic cocktail treated + 5.0 mg/mL EGCG treated group.

12

Figure S2. Effect of EGCG on the expression of IL-6 in mice tongues. (a) Representative IHC staining images and (b) semi-quantitative analysis of IL-6 in mice tongues. Bars without any same letters labeled were significantly different ($p < 0.05$). S, saline treated g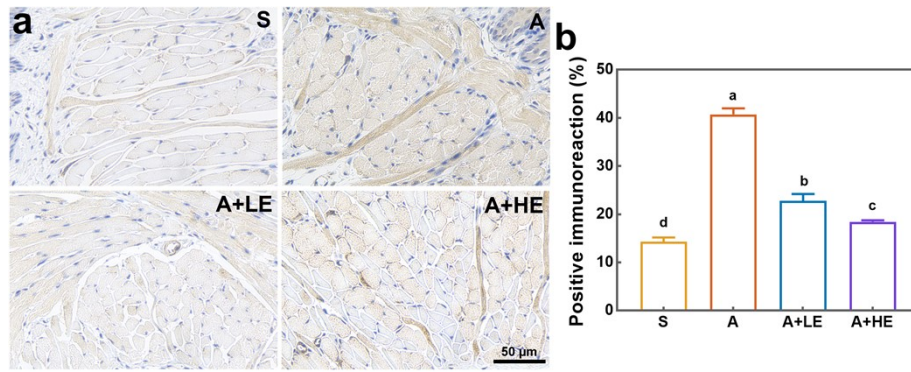roup; A, acetic acid induced inflammation + saline treated group; A+LE, acetic acid induced inflammation + 2.5 mg/mL EGCG treated group; A+HE, acetic acid induced inflammation + 5.0 mg/mL EGCG treated group; A+AC+LE, acetic acid induced inflammation + antibiotic cocktail treated + 2.5 mg/mL EGCG treated group; A+AC+HE, acetic acid induced inflammation + antibiotic cocktail treated + 5.0 mg/mL EGCG treated group.

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**Figure S3. Effect of EGCG on the expression of TNF-α in mice tongues.** (a) Representative IHC staining images and (b) semi-quantitative analysis of TNF-α in mice tongues. Bars without any same letters labeled were significantly different ($p <$ 0.05). S, saline treated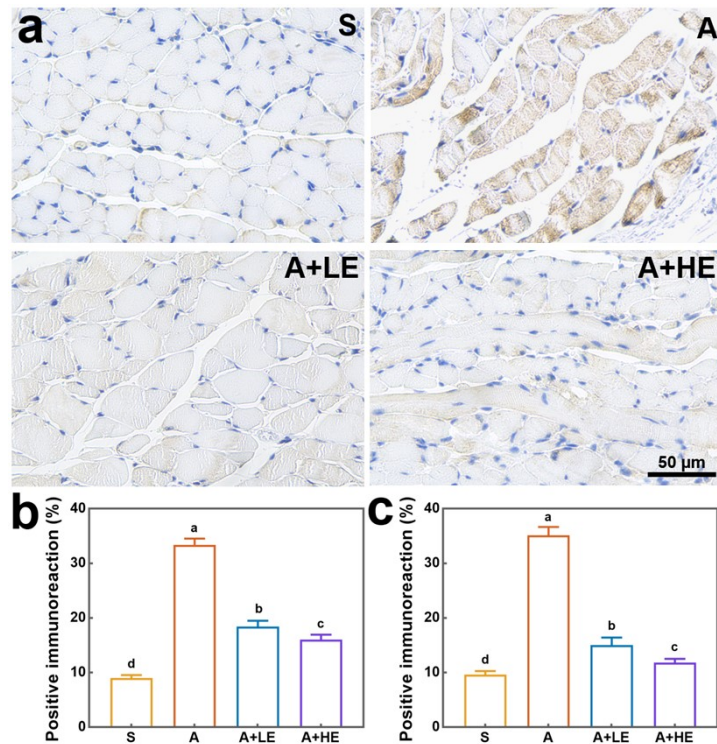 group; A, acetic acid induced inflammation + saline treated group; A+LE, acetic acid induced inflammation + 2.5 mg/mL EGCG treated group; A+HE, acetic acid induced inflammation + 5.0 mg/mL EGCG treated group.

30
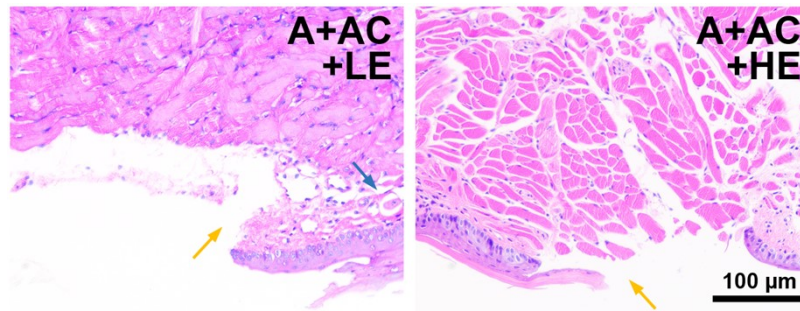
Figure S4. Representative H&E staining images of throats in the germ reduced mice. The yellow and blue arrows indicate the detached epithelium and submucosal edema, respectively. A+AC+LE, acetic acid induced inflammation + antibiotic cocktail treated + 2.5 mg/mL EGCG treated group; A+AC+HE, acetic acid induced inflammation + antibiotic cocktail treated + 5.0 mg/mL EGCG treated group.

Figure S5. Effects of EGCG on the expressions of IL-6 and TNF-α in the throats.

(a) Representative IHC staining images of TNF-α in mice throats. Immunohistochemical semi-quantitative analysis of (b) TNF-α and (c) IL-6 in the throats. Bars without any same letters labeled were significantly different ($p < 0.05$). S, saline treated group; A, acetic acid induced inflammation + saline treated group; A+LE, acetic acid induced inflammation + 2.5 mg/mL EGCG treated group; A+HE, acetic acid induced inflammation + 5.0 mg/mL EGCG treated group.

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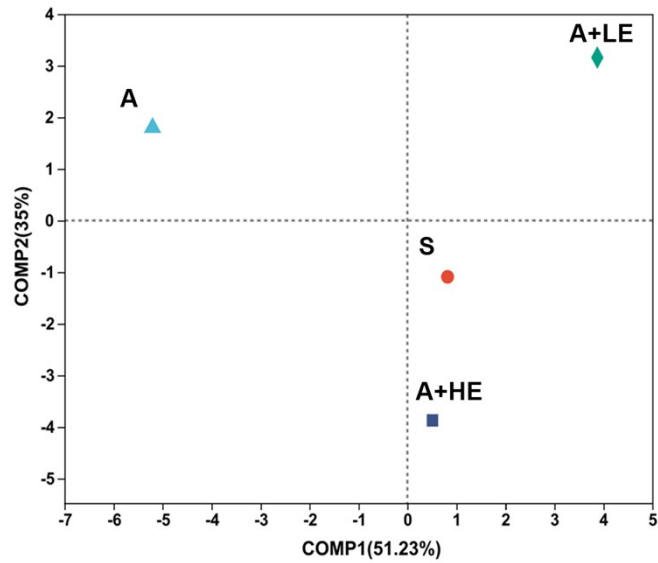
Figure S6. PLS-DA analysis plots based on class level. S, saline treated group; A, acetic acid induced inflammation + saline treated group; A+LE, acetic acid induced inflammation + 2.5 mg/mL EGCG treated group; A+HE, acetic acid induced inflammation + 5.0 mg/mL EGCG treated group.
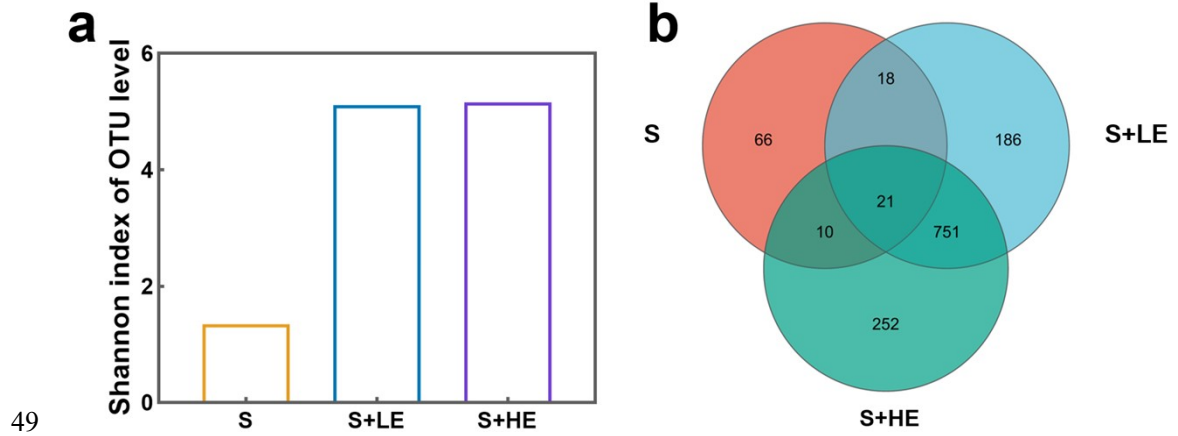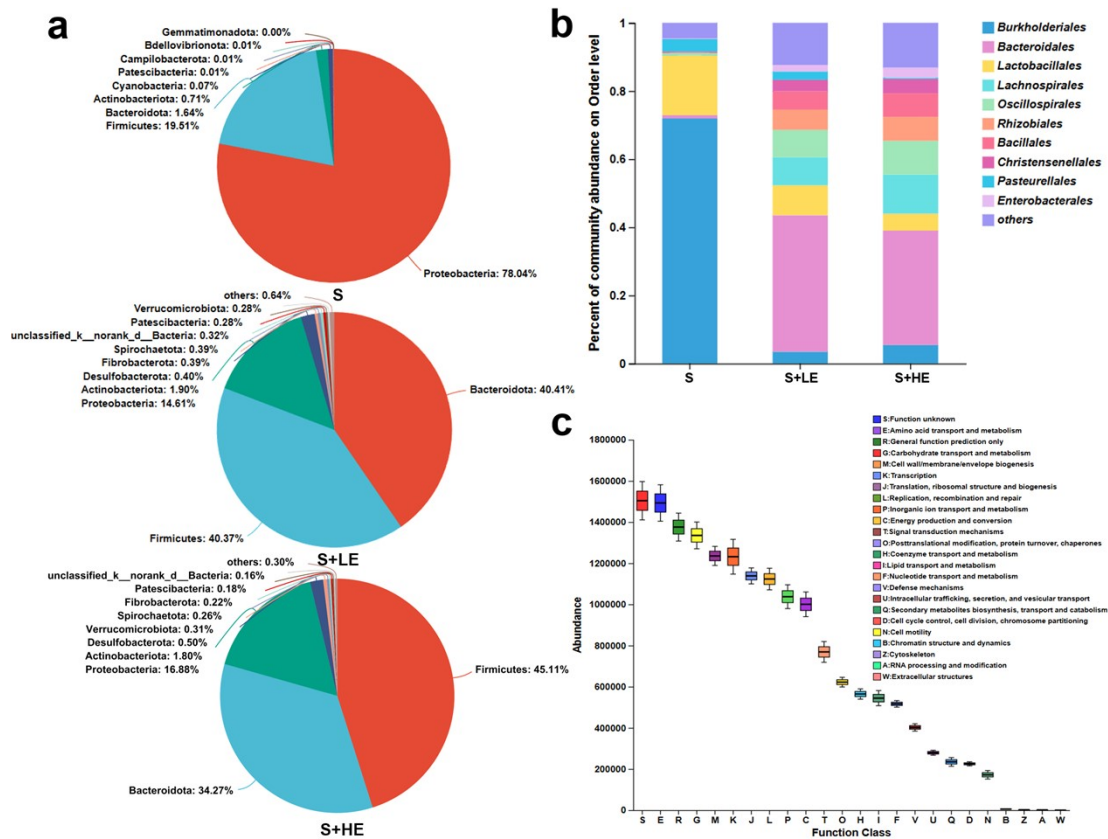
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50 **Figure S7. Effects of EGCG on oral microbial diversity in normal mice.** (a) α-

51 diversity represented by the Shannon index of OTU level. (b) Venn diagram of OTU.

52 S, saline treated group; S+LE, saline treated + 2.5 mg/mL EGCG treated group; S+HE,

53 saline treated + 5.0 mg/mL EGCG treated group.

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Figure S8. Effects of EGCG on the composition and functions of oral microbiota

in normal mice. (a-b) The relative abundance of oral microbiota at (a) phylum level

and (b) order level. (c) The microbial function analyzed by PICRUSt1 program in the

COG database. S, saline treated group; S+LE, saline treated + 2.5 mg/mL EGCG treated

group; S+HE, saline treated + 5.0 mg/mL EGCG treated group.