

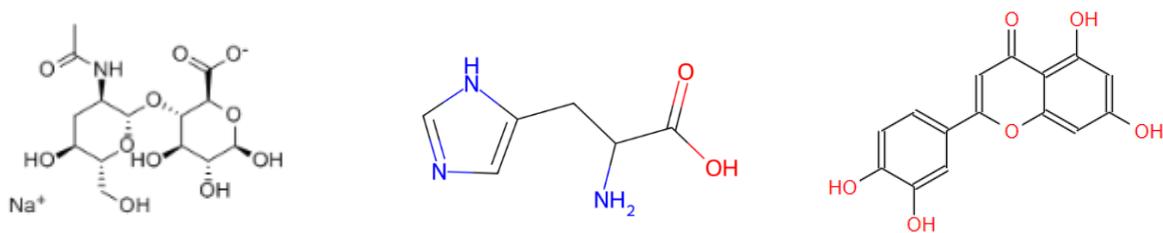
# Supporting Information

**Table.S1. Disease Activity Index Scoring Criteria**

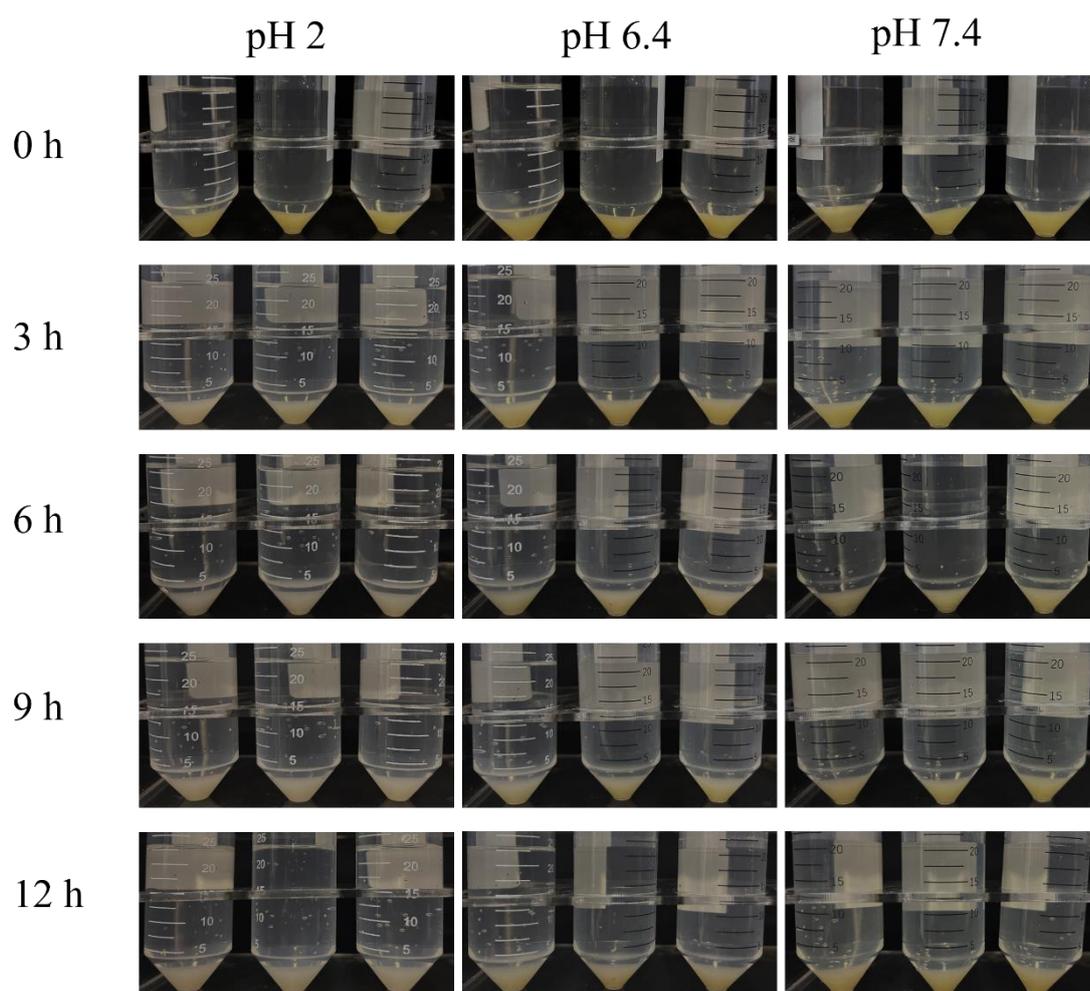
| Weight loss    | Fecal hardness  | Fecal bleeding                    | Vigor, fur, postural behavior | Score |
|----------------|-----------------|-----------------------------------|-------------------------------|-------|
| no weight loss | normal          | no obvious bleeding               | normal                        | 0     |
| 0.1-5%         | loose stools    | a little blood in the feces       | slightly poor condition       | 1     |
| 5-10%          | mild diarrhea   | blood was often seen in the feces | moderately poor condition     | 2     |
| ≥10%           | severe diarrhea | all feces were bloody             | Seriously poor condition      | 3     |

**Table.S2. Specific Primer Sequences for RT-qPCR Analysis**

| Genes           | Forward (5'-3')            | Reverse (5'-3')            |
|-----------------|----------------------------|----------------------------|
| ZO-1            | 5'-CCAGAGCCTCAGAAACCTCA-3' | 5'-GCAGGAAGATGTGCAGAAGG-3' |
| Occludin        | 5'-GCGGAAAGAGTTGACAGTCC-3' | 5'-TGCCTGAAGTCATCCACACT-3' |
| Claudin-1       | 5'-ACGGTCTTTGCACTTTGGTC-3' | 5'-GGGAGAGGAGAAGCACAGTT-3' |
| <i>β</i> -actin | 5'-ATCACTATTGGCAACGAGCG-3' | 5'-TCAGCAATGCCTGGGTACAT-3' |



**Figure S1. The structural information of HA, His and LUT.**



**Figure S2. The pH stability of HHL hydrogels.**

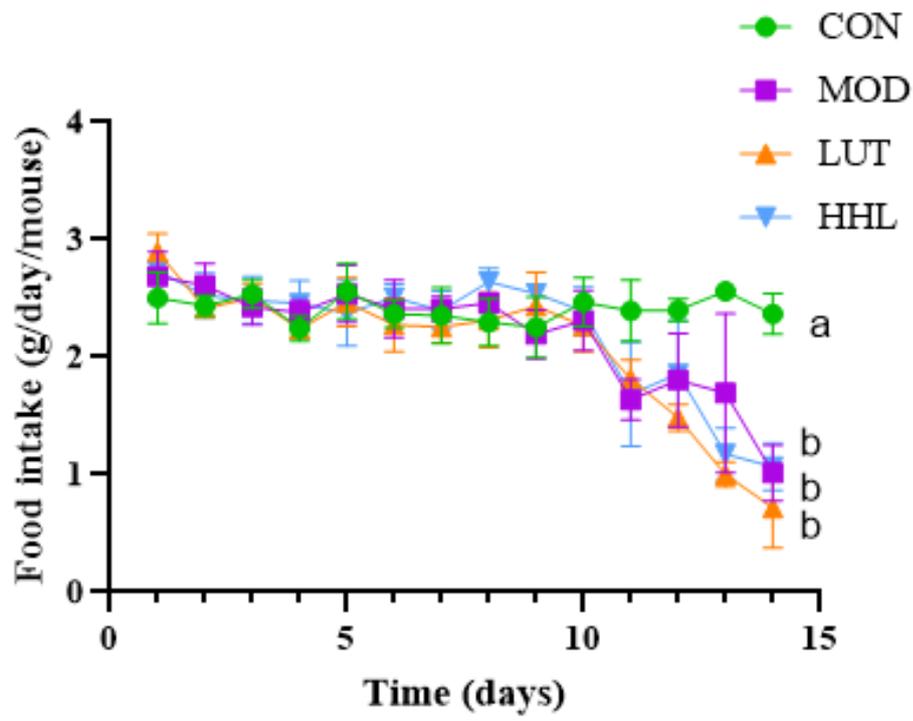
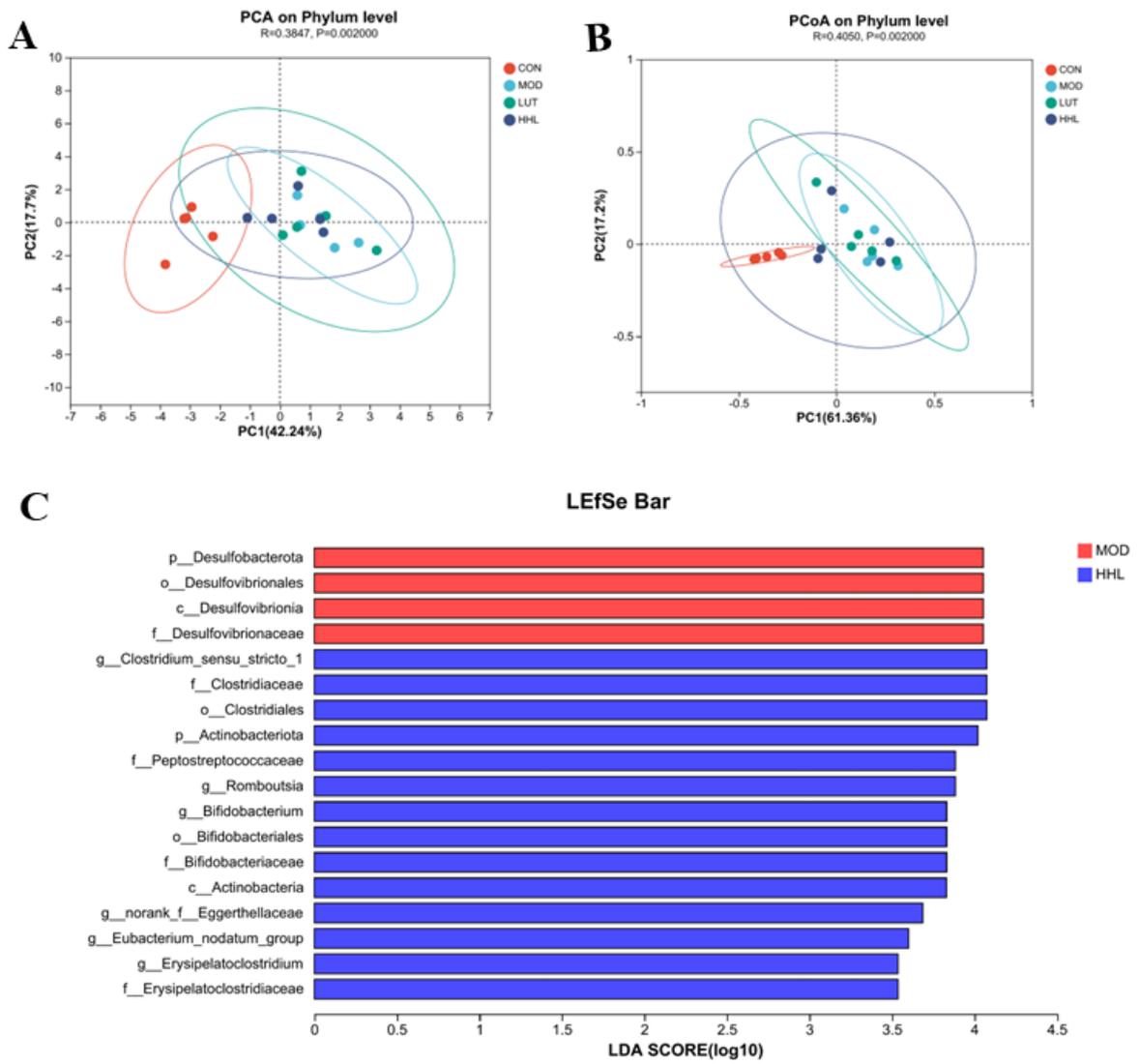


Figure S3. The food intake during animal experiments



**Figure S4.** Gut microbiota composition and differential species analysis of DSS induced colitis mice treated with HHL hydrogel. (A) PCA analysis. (B) PCoA analysis. (C) LDA score.