

**Table S1.** Histological Injury Scoring Criteria for Colon Tissue

| Score | Inflammation Severity | Lesion Depth | Crypt Damage        | Affected Area (%) |
|-------|-----------------------|--------------|---------------------|-------------------|
| 0     | None                  | None         | None                | None              |
| 1     | Mild                  | Submucosa    | 1/4 crypts damaged  | 1–25              |
| 2     | Severe                | Muscularis   | 1/2 crypts damaged  | 26–50             |
| 3     |                       | Serosa       | 3/4 crypts damaged  | 51–75             |
| 4     |                       |              | Complete crypt loss | 76–100            |

**Table S2.** The primer sequences for real-time quantitative PCR.

| Gene           | Product size (bp) | Primer pair | Primer Sequence (5'-3')  |
|----------------|-------------------|-------------|--------------------------|
| $\beta$ -actin | 80                | Forward     | ACTGCCGCATCCTCTTCCTC     |
|                |                   | Reverse     | AACCGCTCGTTGCCAATAGTG    |
| GAPDH          | 80                | Forward     | GCAAATTCAACGGCACAGTCAAG  |
|                |                   | Reverse     | TCGCTCCTGGAAGATGGTGATG   |
| FAS            | 101               | Forward     | TCCTGAAGCCGAACACCTCTG    |
|                |                   | Reverse     | GCGACAATATCCACTCCCTGAATC |
| Acox1          | 104               | Forward     | GACCTGAGTGAGCTGCCTGAG    |
|                |                   | Reverse     | CCGCAAGCCATCCGACATTC     |
| PPAR $\alpha$  | 138               | Forward     | CGGGAAAGACCAGCAACAACC    |
|                |                   | Reverse     | AGCAGTGGAAGAATCGGACCTC   |
| SREBP-1c       | 136               | Forward     | CGCTACCGTTCCTCTATCAATGAC |
|                |                   | Reverse     | TCTGGTTGCTGTGCTGTAAGAAG  |
| IL-6           | 102               | Forward     | CGGAGAGGAGACTTCACAGAGG   |
|                |                   | Reverse     | TTCCACGATTTCCCAGAGAACATG |
| IL-10          | 81                | Forward     | GGACAACATACTGCTAACCGACTC |
|                |                   | Reverse     | TGGATCATTTCCGATAAGGCTTGG |
| IL-1 $\beta$   | 94                | Forward     | TCGCAGCAGCACATCAACAAG    |
|                |                   | Reverse     | TCCACGGGAAAGACACAGGTAG   |
| TNF- $\alpha$  | 86                | Forward     | ACGTGGAAGTGGCAGAAGAGG    |
|                |                   | Reverse     | TGAGAAGAGGCTGAGACATAGGC  |

**Table S3.** ANOVA of Growth Indicators in Mice Fed Different Oils

| Indicator   | Source of Variation | Sum of Squares | df | Mean Square | F-value | p-value | $\eta^2$ |
|-------------|---------------------|----------------|----|-------------|---------|---------|----------|
| Body Weight | Between Groups      | 107.717        | 5  | 21.543      | 5.643   | 0.001   | 0.540    |
|             | Within Groups       | 91.618         | 24 | 3.817       |         |         |          |
|             | Total               | 199.335        | 29 |             |         |         |          |
| Body Length | Between Groups      | 0.791          | 5  | 0.158       | 1.357   | 0.275   | 0.220    |
|             | Within Groups       | 2.796          | 24 | 0.117       |         |         |          |
|             | Total               | 3.587          | 29 |             |         |         |          |
| BMI         | Between Groups      | 0.003          | 5  | 0.001       | 3.218   | 0.023   | 0.401    |

|       |                |          |    |         |       |       |       |
|-------|----------------|----------|----|---------|-------|-------|-------|
| Lee's | Within Groups  | 0.005    | 24 | 0.000   |       |       |       |
|       | Total          | 0.008    | 29 |         |       |       |       |
|       | Between Groups | 612.663  | 5  | 122.533 | 3.594 | 0.014 | 0.480 |
|       | Within Groups  | 818.190  | 24 | 34.091  |       |       |       |
|       | Total          | 1430.853 | 29 |         |       |       |       |

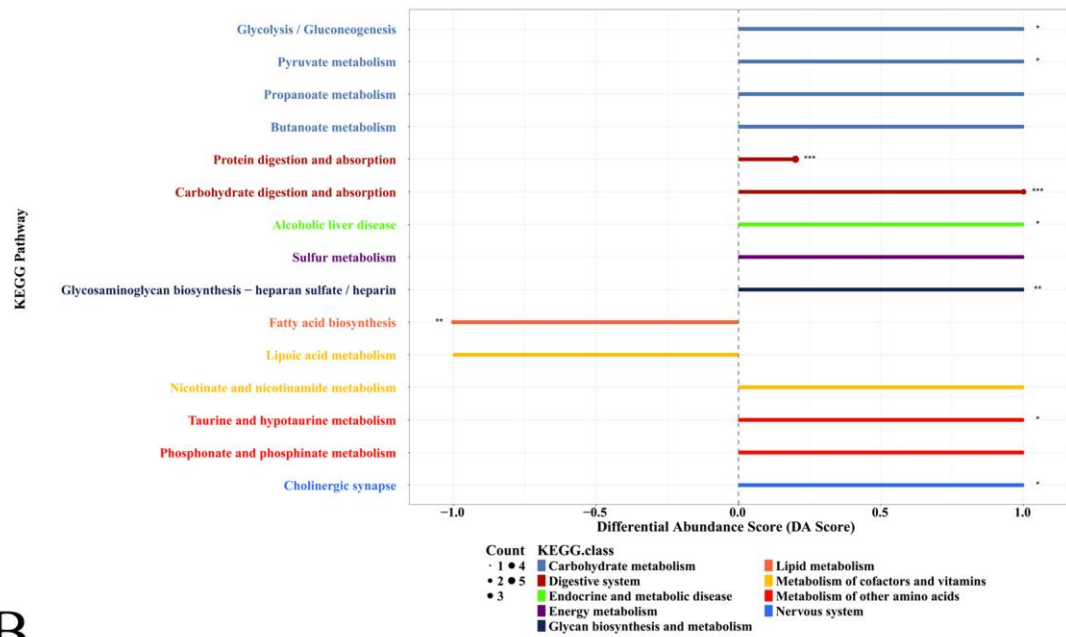
**Table S4.** ANOVA of Serum Lipid Levels in Mice Fed Different Oils

| Indicator | Source of Variation | Sum of Squares | df | Mean Square | F-value | p-value | $\eta^2$ |
|-----------|---------------------|----------------|----|-------------|---------|---------|----------|
| TG        | Between Groups      | 0.087          | 5  | 0.018       | 0.671   | 0.649   | 0.123    |
|           | Within Groups       | 0.624          | 24 | 0.026       |         |         |          |
|           | Total               | 0.712          | 29 |             |         |         |          |
| TC        | Between Groups      | 1.479          | 5  | 0.296       | 3.359   | 0.019   | 0.412    |
|           | Within Groups       | 2.113          | 24 | 0.088       |         |         |          |
|           | Total               | 3.592          | 29 |             |         |         |          |
| HDL-C     | Between Groups      | 1.190          | 5  | 0.238       | 17.774  | 0.000   | 0.787    |
|           | Within Groups       | 0.321          | 24 | 0.013       |         |         |          |
|           | Total               | 1.511          | 29 |             |         |         |          |
| LDL-C     | Between Groups      | 0.047          | 5  | 0.009       | 33.544  | 0.000   | 0.875    |
|           | Within Groups       | 0.007          | 24 | 0.000       |         |         |          |
|           | Total               | 0.053          | 29 |             |         |         |          |
| AI        | Between Groups      | 7.785          | 5  | 1.557       | 31.165  | 0.000   | 0.866    |
|           | Within Groups       | 1.199          | 24 | 0.050       |         |         |          |
|           | Total               | 8.984          | 29 |             |         |         |          |

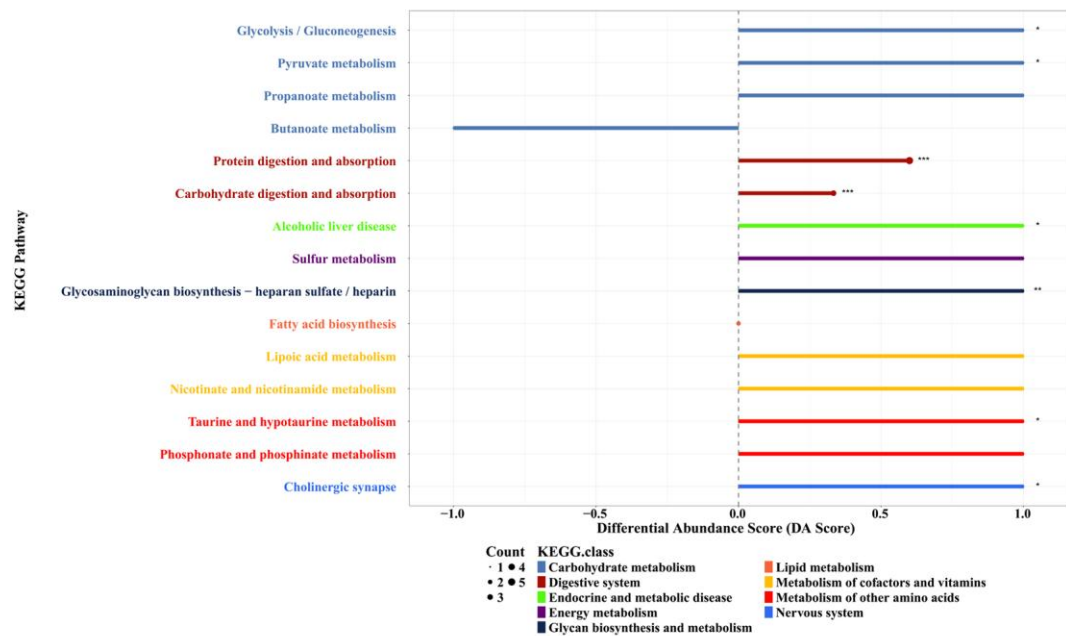
**Table S5.** ADONIS (PERMANOVA) Statistical Test Results

| Group Comparison | df | Sum of Squares | Mean Square | F-value | R <sup>2</sup> | p-value |
|------------------|----|----------------|-------------|---------|----------------|---------|
| CK-RO            | 1  | 0.36531        | 0.36531     | 1.97809 | 0.19824        | 0.012   |
| CK-CA            | 1  | 0.28866        | 0.28866     | 1.55507 | 0.16275        | 0.012   |
| CK-SO            | 1  | 0.26532        | 0.26532     | 1.4297  | 0.15162        | 0.045   |
| CK-HSO           | 1  | 0.2863         | 0.2863      | 1.90876 | 0.19263        | 0.009   |
| CK-LSO           | 1  | 0.41083        | 0.41083     | 2.33104 | 0.22563        | 0.010   |

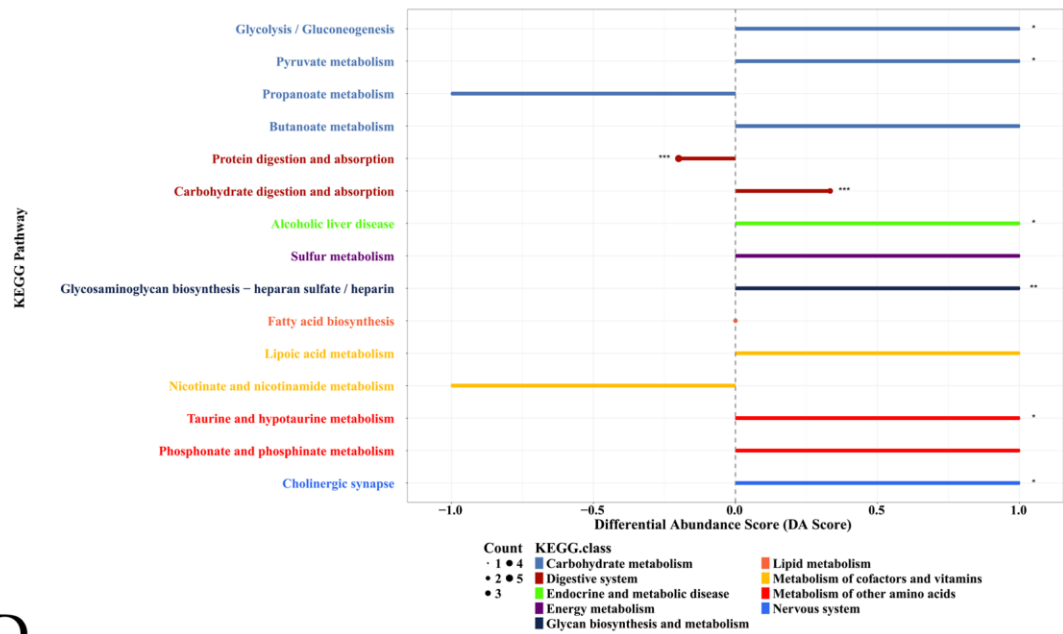
A



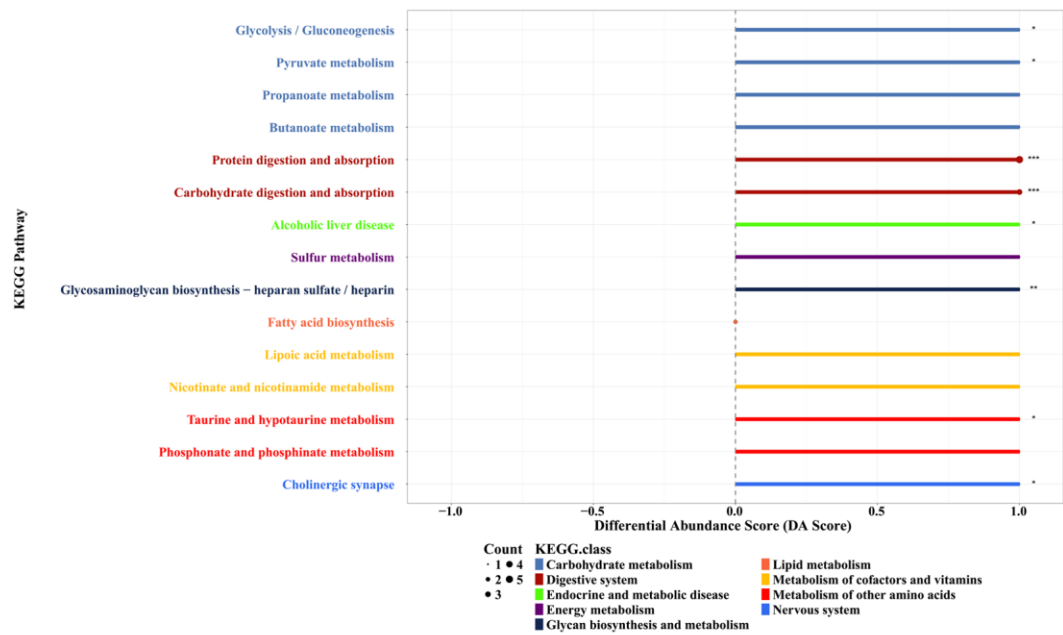
B



C



D



E

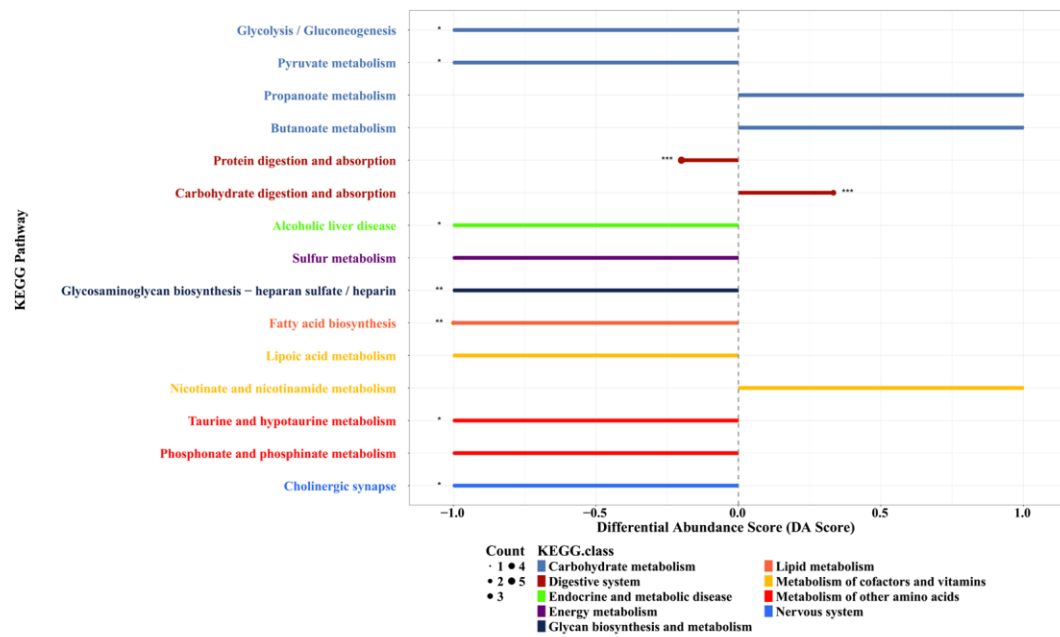


**Figure S1.** KEGG pathway enrichment differential analysis: (A) CK group versus RO group, (B) CK group versus CA group, (C) CK group versus SO group, (D) CK group versus HSO group, and (E) CK group versus LSO group (\*  $P < 0.05$ , \*\*  $P < 0.01$ , \*\*\*  $P < 0.001$ ).