**Supplementary data:**

**Tables**

**Table S1 Components of the mouse diet.**

| Type of feed | Nutrition indicators | Content(gm%) |
|---|---|---|
| Growth maintenance feed | Protein | 18% |
| | Fat | 4% |
| | Fiber | 5% |
| | Crude ash | 8% |
| | Calcium | 1.0-1.8% |
| | Total phosphorus | 0.6-1.2% |
| Model feed (D12079B) | Protein | 19.8% |
| | Fat | 21% |
| | Carbohydrate | 50% |
| | Fiber | 5% |
| | Calcium Phosphate | 1.75% |
| | Calcium Carbonate | 0.4% |
| | Total vitamins | 0.3% |

**Table S2 The sequences of oligonucleotide primers.**

| Genes | Forward Primer Sequence (5'→3') | Reverse Primer Sequence (5'→3') |
| --- | --- | --- |
| *mouse-β-actin* | ACTGTCGAGTCGCGTCC | CCCACGATGGAGGGGAATAC |
| *mouse-ucp1* | GCAGGGAAAGAAACAGCACC | CCCGTGTAGCGAGGTTTGAT |
| *mouse-pgc1α* | CAGGCAGTAGATCCTCTTCAAG | TCCTCGTAGCTGTCATACCTG |
| *mouse-pparγ* | ATACATAAAGTCCTTCCCGCTG | GGGTGATGTGTTTGAACTTGATT |
| *mouse-cieda* | CTCATCAGGCCCCTGACATT | CCTGTCATGGTTGGAGACCC |
| *mouse-prdm16* | TTCGGATGGGAGCAAATACTG | CACGGATGTACTTGAGCCAG |
| *mouse-fas* | GGCTCTATGGATTACCCAAGC | CCAGTGTTCGTTCCTCGGA |
| *mouse-cebpα* | CGTTGACATCCGTAAAGACC | AACAGTCCGCCTAGAAGCAC |
| *mouse-il-6* | AAAGCAGCAAAGAGGCACTG | TACCTCAAACTCCAAAAGACCAG |
| *mouse-il-1b* | GCTTCAGGAGGCAGTATCA | TGCAGTTGCTAATGGGAACG |
| *mouse-tnf-a* | AGGCACTCCCCCAAAAGATG | TTGAGAAGATGATCTGAGTGTGAG |
| *mouse-icam-1* | TCACCTATGGCAACGACTCC | GTGTCTCCTGGCTCTGGTTC |
| *mouse-vcam-1* | GAAGGTGGCTCTGTGACCAT | AAAGGTGCTGTAGATTCCCATT |
| *mouse-inos* | GTGCCACTGTTGTCTTCAGG | ATAGCTTCTGCCAACCGAAC |
| *mouse-mcp-1* | GCTCATAGCAGCCACCTTCATTC | GGACACTTGCTGCTGGTGATTC |
| *mouse-e-selection* | GAATGGGATAGCAAGAAGC | TTCTTGCTATCCCATTCC |
| *human-gapdh* | CACCAGGGCTGCTTTTAACTCTGGTA | CCTTGACGGTGCCATGGAATTTGC |
| *human-il-6* | ACTCACCTCTTCAGAACGAATTG | CCATCTTTGGAAGGTTCAGGTTG |
| *human-il-1b* | ATGATGGCTTATTACAGTGGCAA | GTCGGAGATTCGTAGCTGGA |
| *human-tnf-a* | GTGACAAGCCTGTAGCCCATGTT | TTATCTCTCAGCTCCACGCCATT |
| *human-icam-1* | GGAACAACCGGAAGGTGTATG | TGCCAGTTCCACCCGTTCT |
| *human-vcam-1* | GGTATCTGCATCGGGCCTC | TAAAAGCTTGAGAAGCTGCAAACA |
| *human-e-selection* | CTAGGCCACAGAATTGAAAGATCT | GTAGGTGGAATTCTAGCATCATCC |
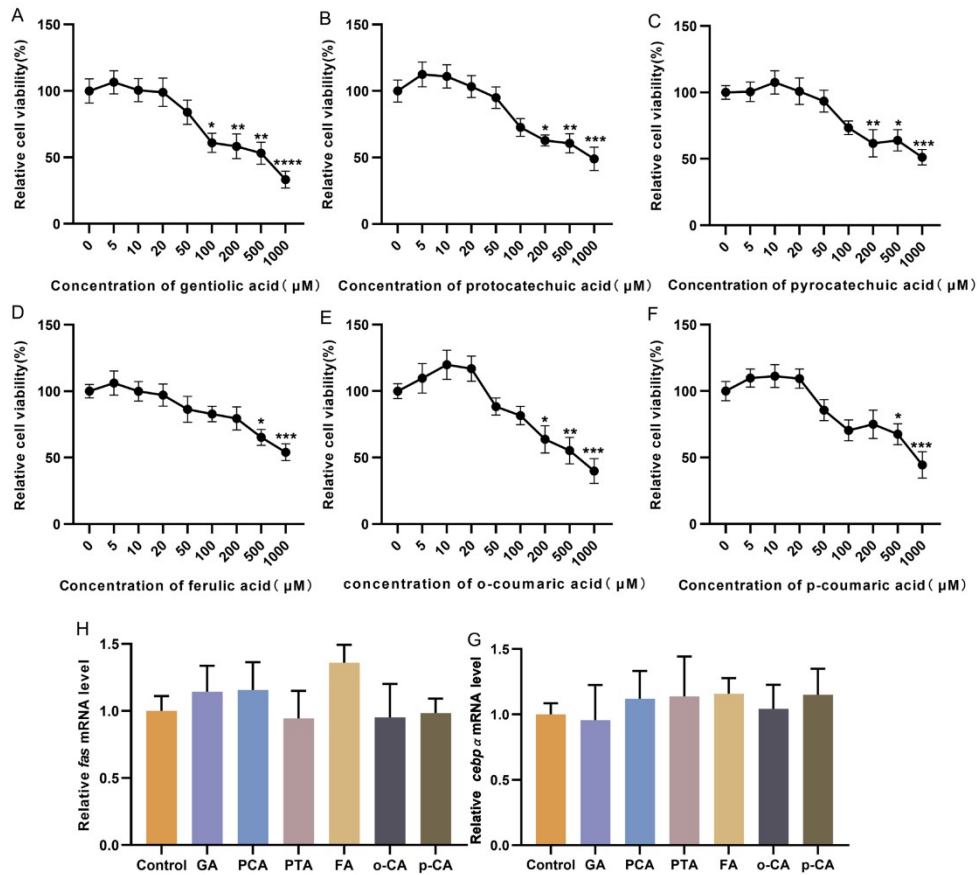
**Figure S1.** The impact of phenolic acids on the activity and lipid metabolism of C3H10T1/2 cells.

(A-F) The relative cell viability of C3H10T1/2 cells after treatment with various concentrations of

phenolic acids (n=6). (A) gentisic acid, (B) protocatechuic acid, (C) Pyrocatechuic acid, (D) ferulic

acid, (E) o-coumaric acid, (F) p-coumaric acid. (H-G) Relative mRNA expression of fas (H), and

cebp-α (G) in C3H10T1/2 cells after phenolic acid treatment (n=3). Data are expressed as the means

± SEM. *$p<0.05$, **$p<0.01$, ***$p<0.001$, ****$p<0.0001$. $p$-value was assessed with One-way
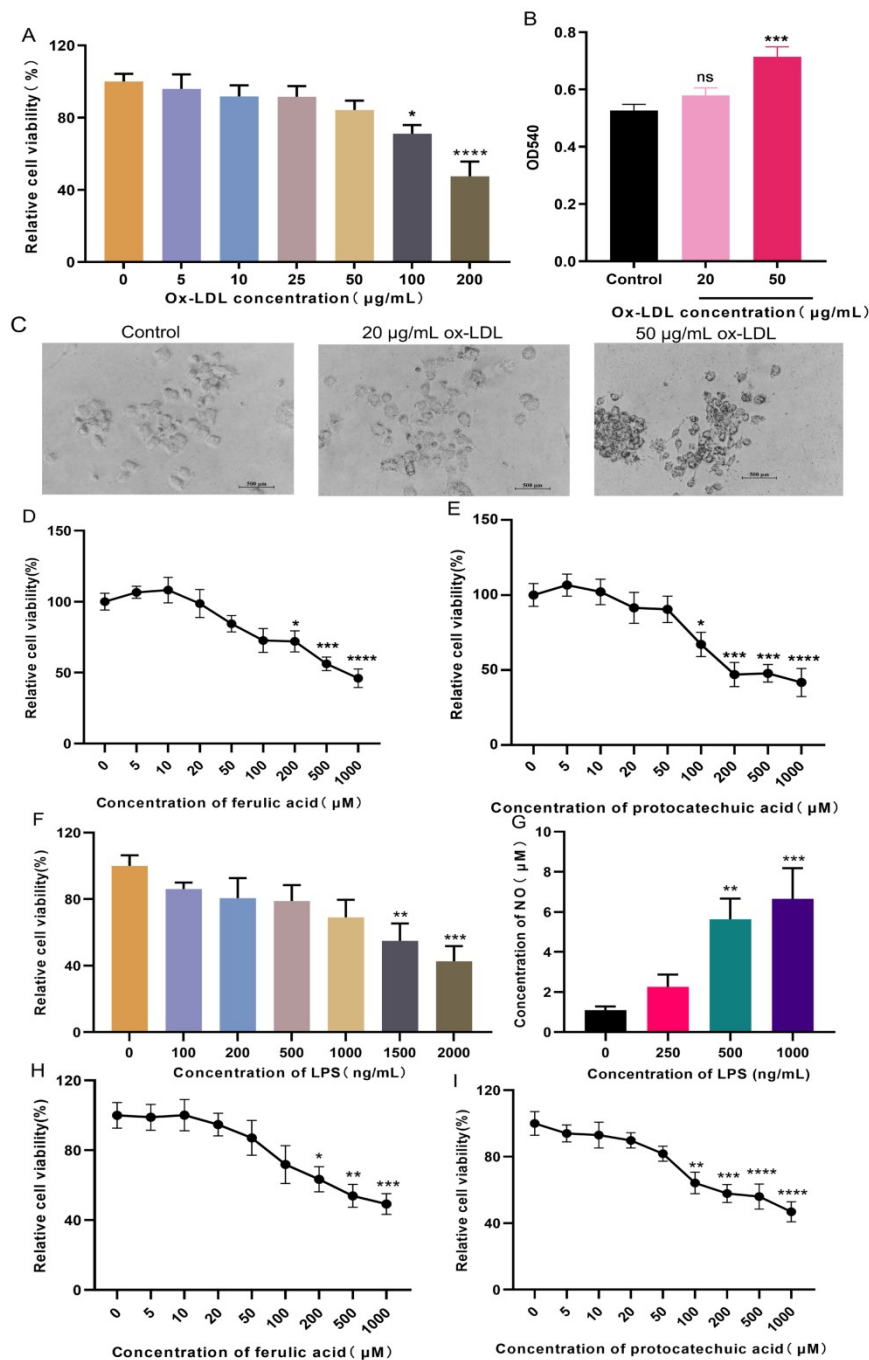
ANOVA via Turkey followed by the Dunnett test.

**Figure S2.** The impact of various inducers and phenolic acid concentrations on RAW264.7 and epithelial cells (n=6 in all experiments). (A) The relative viability of RAW264.7 cells under different concentrations of Ox-LDL treatment. (B) Intracellular lipid content and Oil red O staining images (C) in RAW264.7 cells treated with different concentrations of Ox-LDL. (D-E) The relative viability of RAW264.7 cells under various concentrations of FA and PCA treatments. (D) FA, (E) PCA. (F) The relative cell viability of epithelial cells under different concentrations of LPS treatment. (G) The

nitric oxide content within epithelial cells under different concentrations of LPS treatment. (H-I) The

relative viability of epithelial cells under different concentrations of FA and PCA treatments, (D) FA,

(E) PCA. Data are expressed as the means ± SEM. *$p$<0.05, **$p$<0.01, ***$p$<0.001, ****$p$<0.0001.

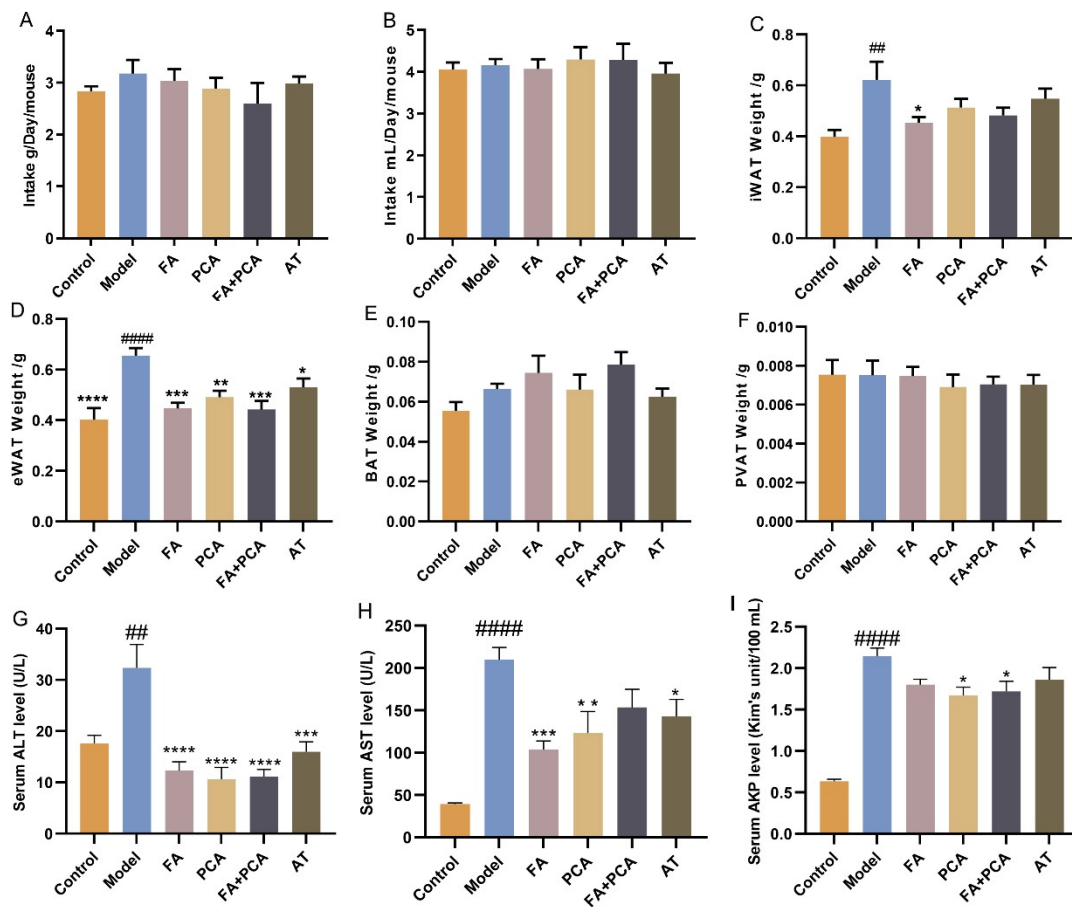$p$-value was assessed with One-way ANOVA via Turkey followed by the Dunnett test.

**Figure S3.** The effects of FA and PCA treatment on the dietary intake and organ weights of ApoE$^{-/-}$ mice (n=6 in all experiments). (A) The daily food intake of mice**.** (B) The daily water consumption of mice. (C-F) The weight of mouse adipose tissue. (C) iWAT; (D) eWAT; (E) BAT; (F) PVAT. (G-I) Serum levels of ALT (G), AST (H), AKP (I). Data are expressed as the means ± SEM. *$p<0.05$, **$p<0.01$, ***p<0.001, ****$p<0.0001$ vs. Model. ##$p<0.01$, ###$p<0.001$, ####$p<0.0001$ vs. Control. $p$-value was assessed with One-way ANOVA via Turkey followed by the Dunnett test.