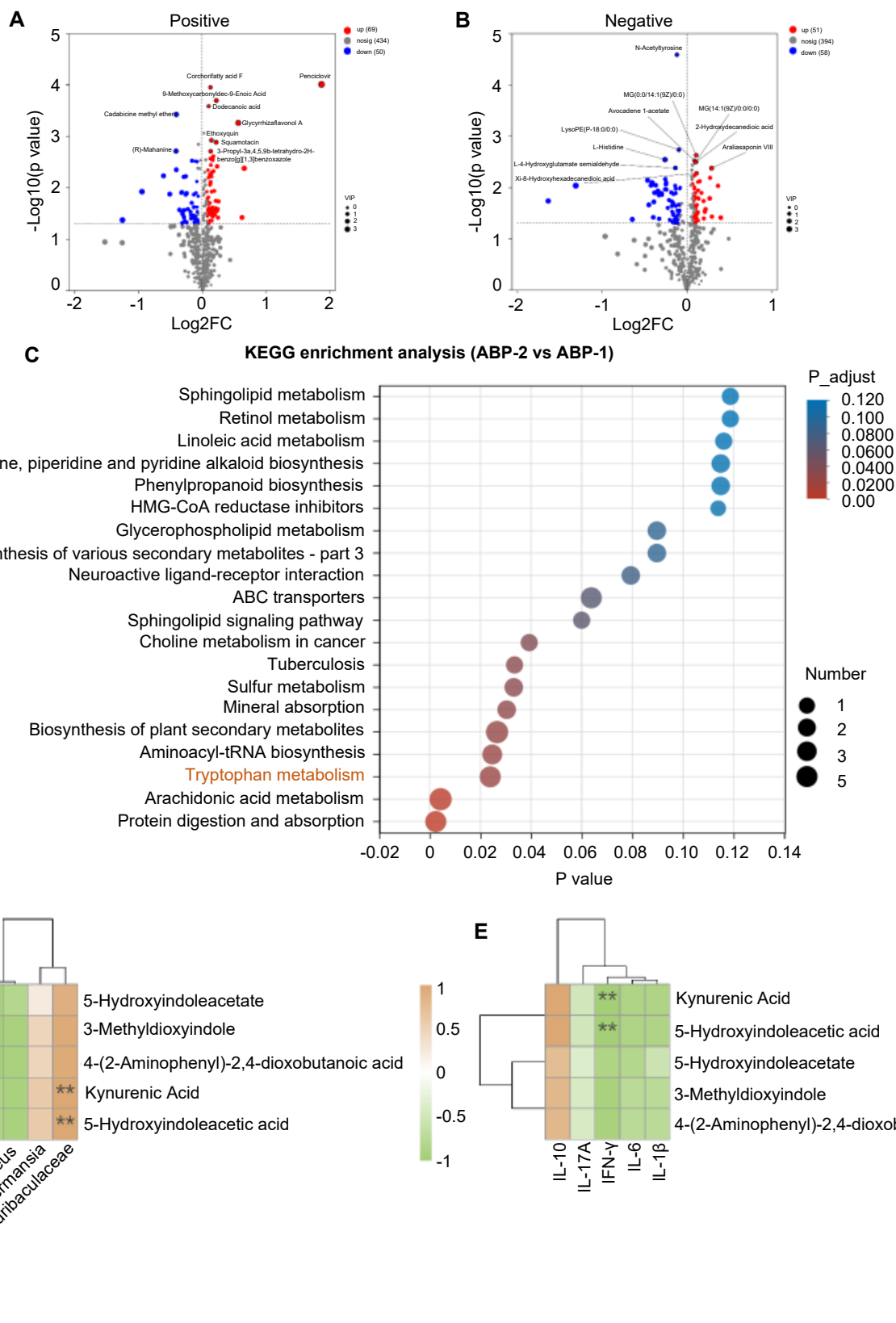
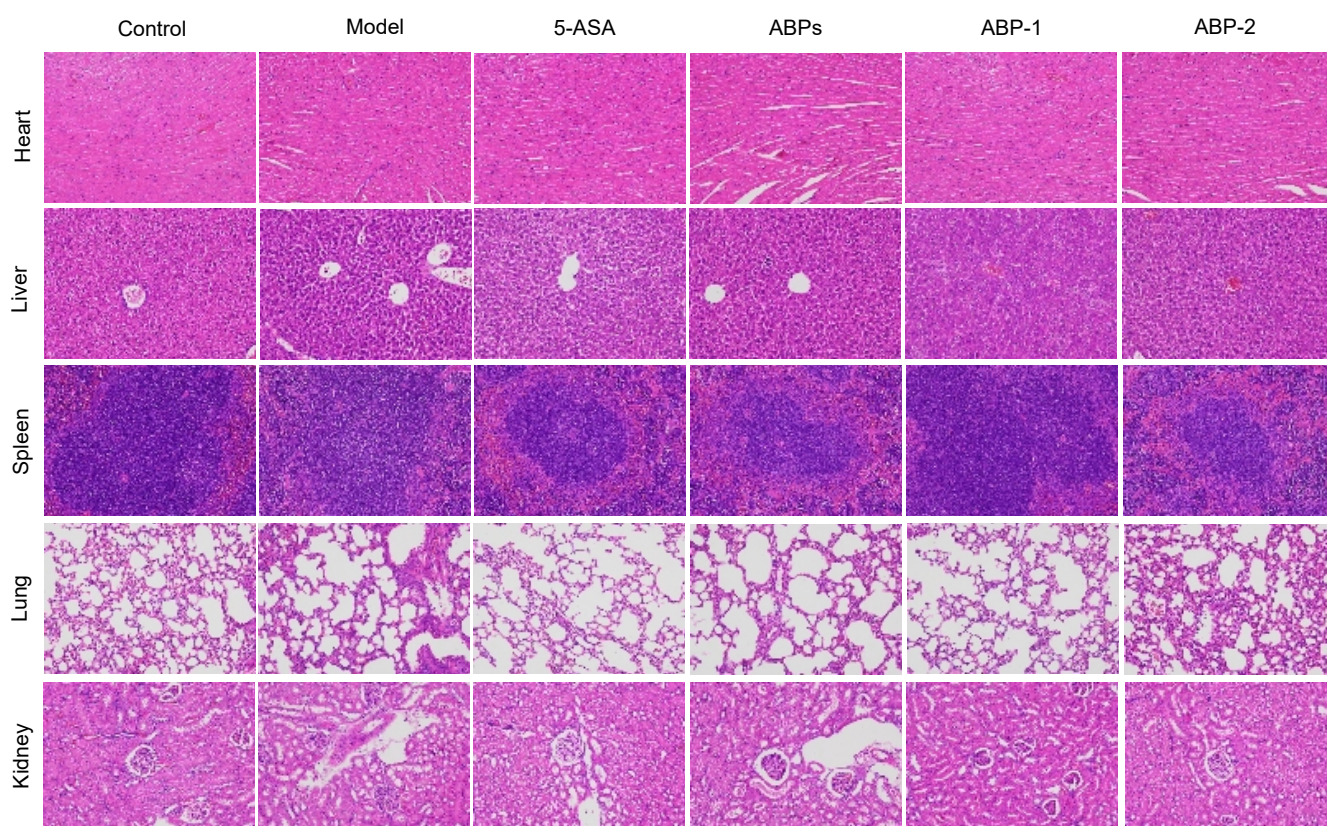


Supplementary Fig. S1. Fecal metabolomics in ABP-1 and Model groups. Volcano plot showing the differentially accumulated and significantly changed metabolites in ABP-1 group compared to Model group in (A) positive and (B) negative ion mode. (C) Pathway enrichment based on altered metabolites. (D) Correlation analysis among vital bacteria and metabolites related to steroid hormone biosynthesis. (E) Correlation analysis among inflammatory cytokines and metabolites related to steroid hormone biosynthesis. $n = 3$, $*p < 0.05$, $**p < 0.01$ and $***p < 0.001$.



Supplementary Fig. S2. Fecal metabolomics in ABP-2 and ABP-1 groups. Volcano plot showing the differentially accumulated and significantly changed metabolites in ABP-2 group compared to ABP-1 group in (A) positive and (B) negative ion mode. (C) Pathway enrichment based on altered metabolites. (D) Correlation analysis among vital bacteria and metabolites related to tryptophan metabolism. (E) Correlation analysis among inflammatory cytokines and metabolites related to tryptophan metabolism. $n = 3$, $*p < 0.05$, $**p < 0.01$ and $***p < 0.001$.



Supplementary Fig. S3. Safety evaluation of ABPs, ABP-1, and ABP-2. H&E staining of heart, liver, spleen, lung, and kidney ($\times 200$).