

Supplementary data

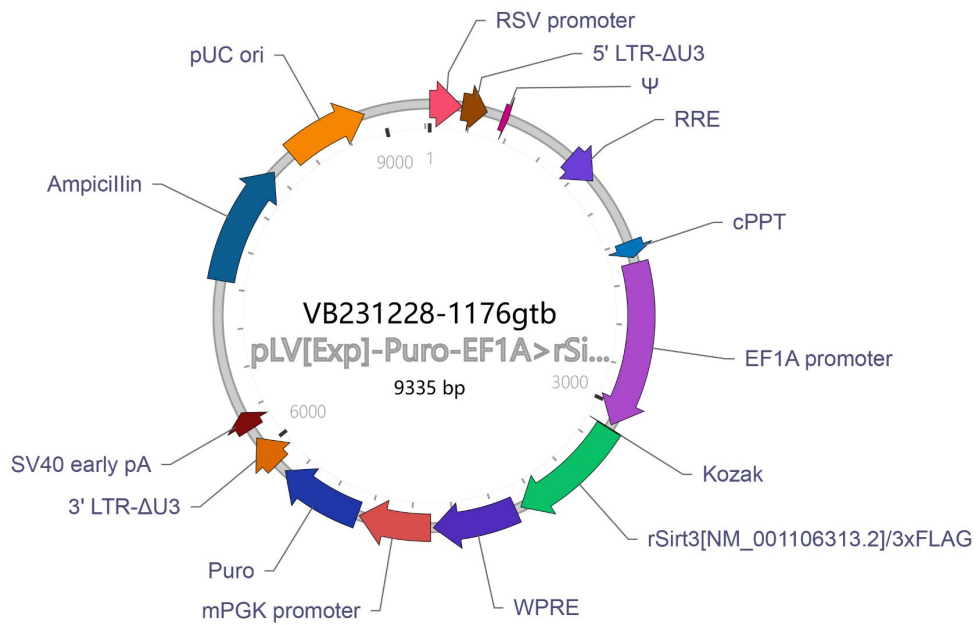


Figure S1. The recombinant plasmid pLV-rSIRT3 information.

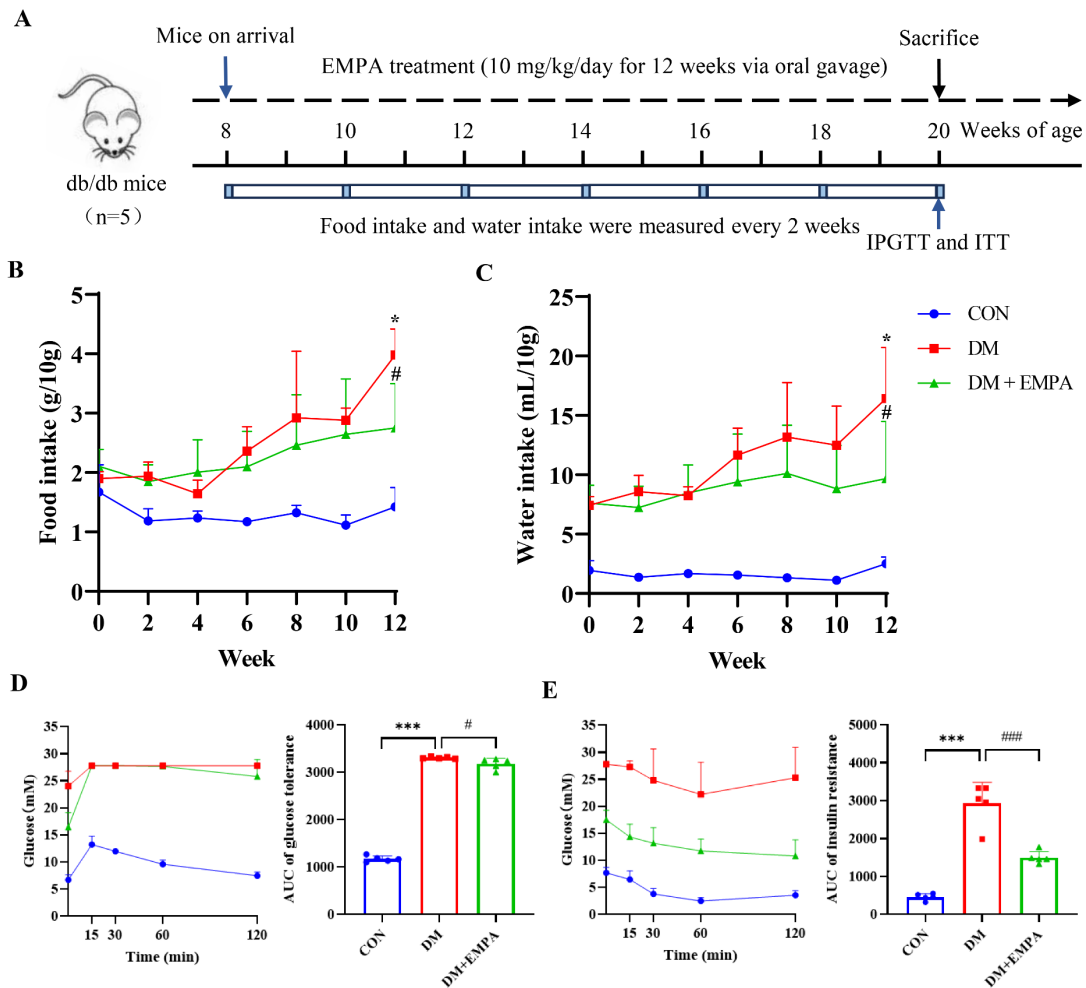


Figure S2. Changes in metabolic profiles after the EMPA intervention in db/db mice. (A) Treatment scheme for the DM+EMPA group. (B-C) The food, and water intake of the CON, DM, and DM+EMPA groups were measured each two weeks. (D) Glucose tolerance. (E) Insulin tolerance. Data are shown as the mean $\pm$ SD. $n = 5$ per group. $*p < 0.05$, $***p < 0.001$ vs CON; $\#p < 0.05$, $###p < 0.001$ vs DM.

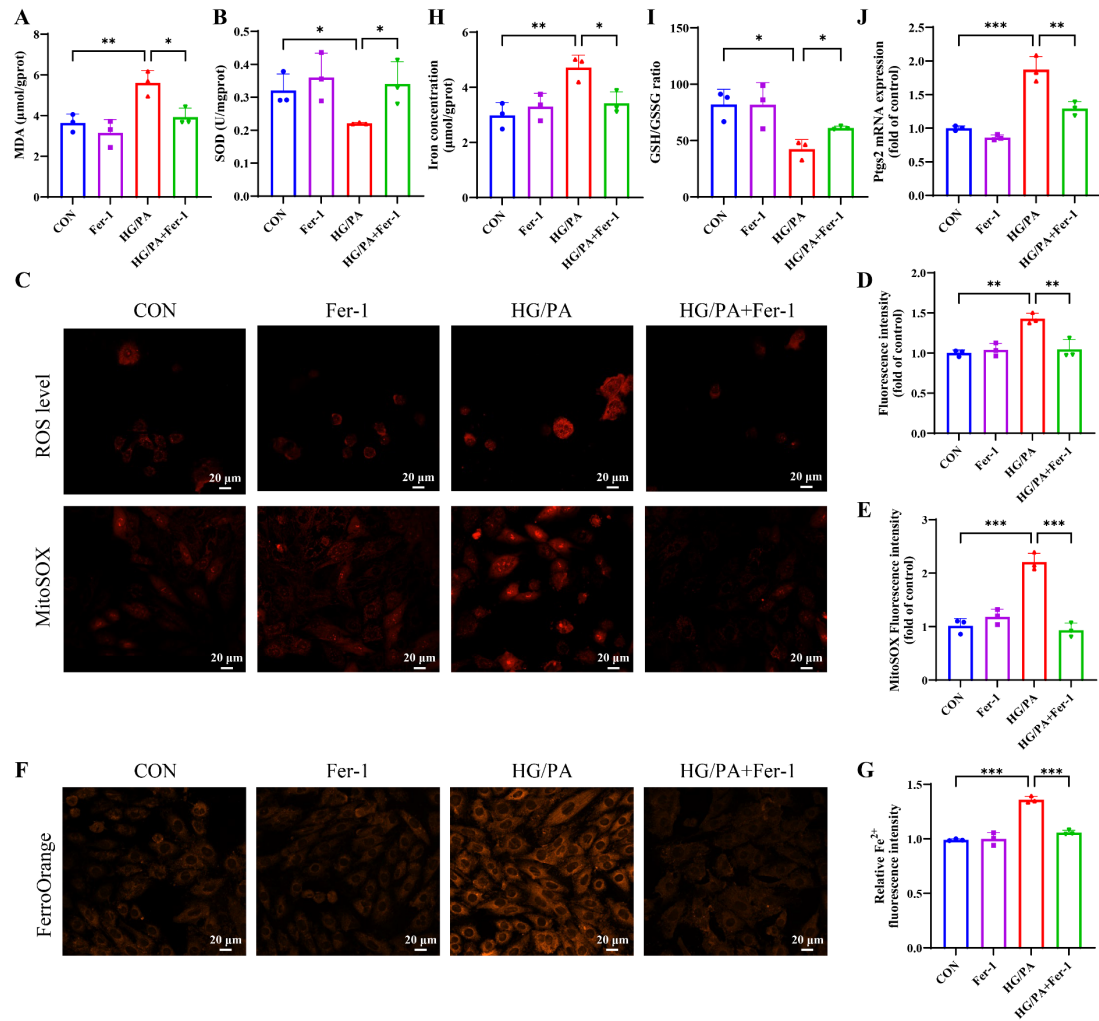


Figure S3. HG/PA induces ferroptosis in H9c2 cells. (A) MDA levels. (B) SOD activity. (C) Intracellular and mitochondrial ROS levels were assessed using DHE and MitoSOX probes, respectively. (D-E) Quantification of fluorescence intensity from total ROS and mitoROS. (F-G) Representative FerroOrange fluorescence images and quantification of intracellular Fe²⁺ levels. (H) Total iron concentration. (I) GSH/GSSG ratio. (J) Relative mRNA levels of Ptg2. Three independent experiments are performed in each study. Data are shown as the mean $\pm$ SD. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table S1. Primer Sequences

Gene	Organism	Sequence (5'→3')
Ptgs2	Mouse	F: TGAGCAACTATTCCAAACCAGC R: GCACGTAGTCTTCGATCACTATC
Actb	Mouse	F: GGCTGTATTCCCCTCCATCG R: CCAGTTGGTAACAATGCCATGT
Sirt3	Rat	F: ACTACTTCCTTCGGCTGCTTCAC R: CAGGGATACCAGATGCTCTCTCAAG
Ptgs2	Rat	F: ATGTTTCGCATTCTTTGCCAG R: TACACCTCTCCACCGATGAC
Actb	Rat	F: TCGTGCGTGACATTAAAGAG R: ATTGCCGATAGTGATGACCT

F, Forward primer; R, Reverse primer.

Table S2. mtDNA-related Primer Sequences

Gene	Organism	Sequence (5'→3')
COX II	Mouse	F: TCATAATTGCCCTCCCCTCTC R: ACTTCTAGCAGTCGTAGTTCACCAG
Rps18	Mouse	F: AGTTCCAGCACATTTTGCGAG R: TCATCCTCCGTGAGTTCTCCA
ND-1	Rat	F: AAGCGGCTCCTTCTCCCTACAAAT R: GAAGGGAGCTCGATTTGTTTCTGC
β -actin	Rat	F: TGAGAGGGAAATCGTGCGTGAC R: GGAAGAGGATGCGGCAGTGG

F, Forward primer; R, Reverse primer.