Gene	Log_2 fold change	adjusted p-value
SIRT1	0.01743	0.92673
SOX9	-0.46204	0.00001

Table S1 RNA-seq expression profiles of *SIRT1* and *SOX9* in ARPE-19 cells upon HQ treatment

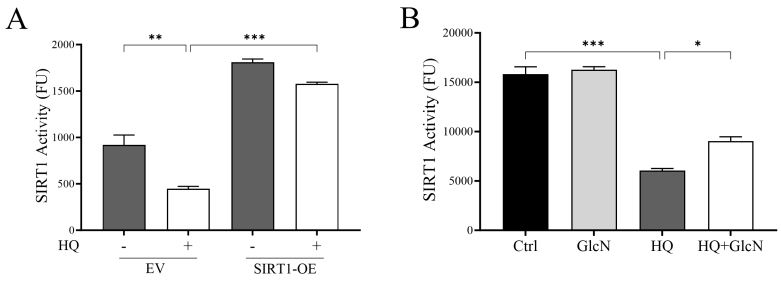


Fig.S1 SIRT1 overexpression and glucosamine treatment restore SIRT1 activity in HQ-exposed ARPE-19 cells

(A) ARPE-19 cells were transfected with empty vector or SIRT1-overexpressing plasmids, followed by treated with 250 μM HQ for 6 hours. (B) ARPE-19 cells were incubated with 250 μM HQ in the presence or absence of 10 mM GlcN for 6 hours. The activity of SIRT1 in ARPE19 cells after indicated treatments was analyzed using a SIRT1 activity assay kit. HQ, hydroquinone. EV, empty vector plasmids-transfected cells. SIRT1-OE, SIRT1-overexpressing plasmids-transfected cells. *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$ by one-way ANOVA followed by Bonferroni's post hoc test. Data are presented as the mean ± SEM. SEM, error bars.

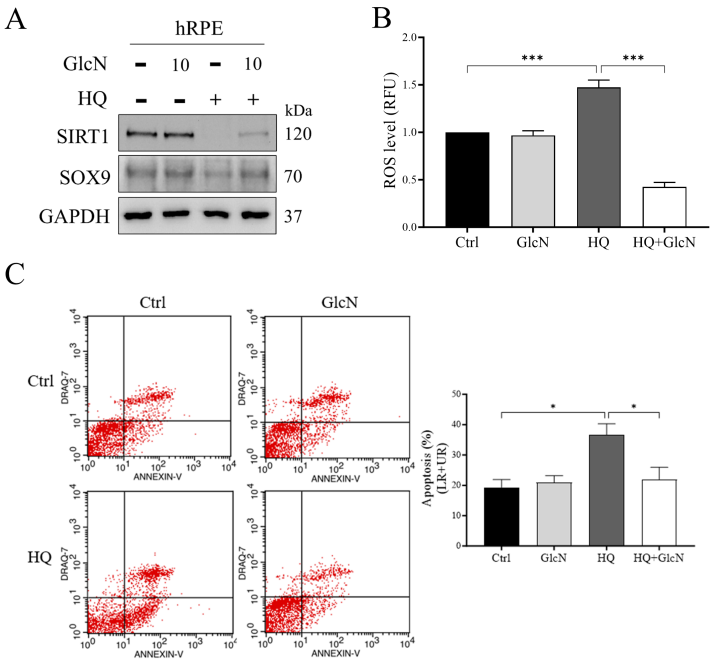


Fig.S2 Glucosamine protected hRPE cells against hydroquinone-induced oxidative stress and cell damage

hRPE cells were treated with 250 μM of HQ for 6 hours with/without 10 mM of GlcN pre-treatment. (A) Protein expressions of SIRT1 and SOX9 were analyzed by Western blot analysis. (B) Intracellular ROS levels were determined using a cell-based fluorescent detection assay. (C) Apoptotic cells were analyzed by Annexin V-FITC/DRAQ7 staining and flow cytometry. Representative images are shown (left panels). The bar chart shows the quantitative results of apoptotic cells (right panel). HQ, hydroquinone. GlcN, glucosamine. GAPDH was used as the loading control. *$p < 0.05$, ***$p < 0.001$ by Bonferroni's post hoc test. Data are expressed as the mean ± SEM. SEM, error bars.

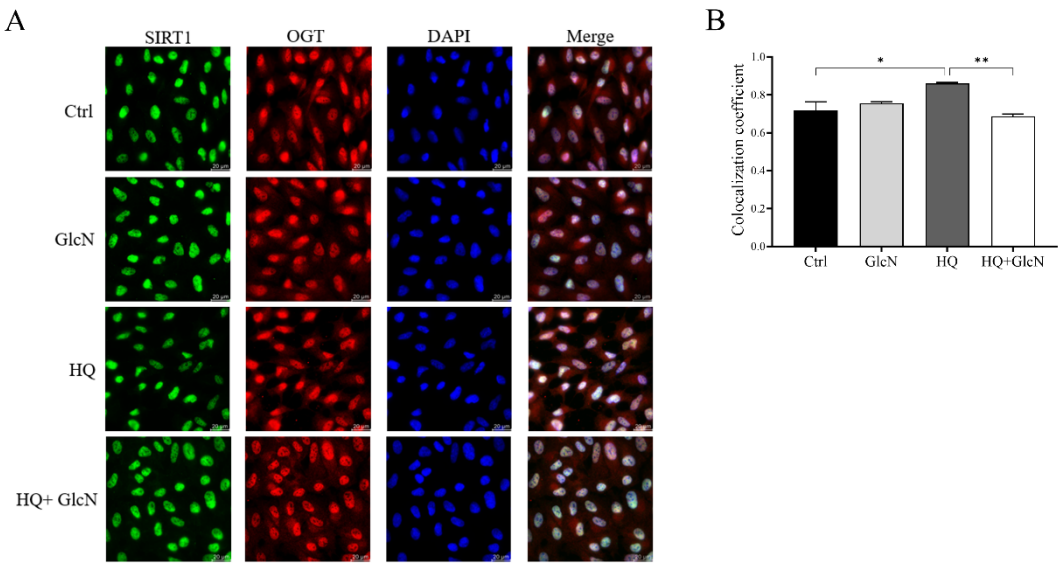


Fig.S3 Glucosamine attenuated hydroquinone-induced SIRT1-OGT colocalization in ARPE-19 cells

ARPE-19 cells were pre-treated with/without GlcN followed by exposure to 250 μM of HQ for 6 hours. (A) Colocalization of SIRT1 and OGT was observed by immunofluorescence staining. Representative immunofluorescence images display SIRT1 (green), OGT (red), and nuclei counterstained with DAPI (blue). Colocalized signals appeared yellow in merged images. Scale bar, 20 μm. (B) Quantification of SIRT1-OGT colocalization was performed using Pearson's correlation coefficient. HQ, hydroquinone. GlcN, glucosamine. *$p < 0.05$, **$p < 0.01$ by one-way ANOVA followed by Bonferroni's post hoc test. Data are presented as the mean ± SEM. SEM, error bars.