**Highlights**

1. MEG3 expression was upregulated in the mouse model of acute glaucoma and OGD/reoxygenation celluar model.
2. RNA immunoprecipitation and RNA pull down displayed that MEG3 directly targeted miR-106b, while luciferase reporter assay confirmed the interaction between miR-106b and caspase-8.
3. MEG3 knockdown relieved retinal ganglion cells (RGCs) apoptosis via downregulating miR-106b target gene caspase-8.