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# Light-Induced Retinal Ganglion Cell Damage and the Relevant Mechanisms

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## Abstract

While light is the basic element for inducing vision and modulating circadian rhythms, excessive light has been reported to have a negative effect on the survival of various types of retinal cells. Among them photoreceptors and retinal pigment epithelial (RPE) cells degeneration after light exposure is widely observed, but light-induced retinal ganglion cell (RGC) damage achieves relatively little attention. The purpose of this article is to summarize the experimental evidence for the possible negative effects of excessive light on RGCs. By searching the database, twenty-six related articles have been included. Taken together, excessive light may insult RGCs through the three main ways: (i) directly action on RGC mitochondria, as well as DNA, resulting in an upregulation of reactive oxygen species (ROS) and subsequently caspase-dependent or -independent cell death; (ii) mediation in gliotransmitters or relevant receptors of retinal glial cells; and (iii) a secondary event to photoreceptors and RPE cells degeneration and subsequent retinal remodeling. So RGCs can certainly be injured by excessive light, especially when they are already energetically compromised in some diseases. And more attentions should be paid to this topic to take timely measures to protect these frail RGCs from being damaged by excessive light.