



## Diabetes: Chapter 4. Diabetic Retinopathy and Oxidative Stress

*Jose Javier Garcia-Medina, null Monica del-Rio-Vellosillo, Manuel Garcia-Medina, Vicente Zanon-Moreno, Roberto Gallego-Pinazo, Maria Dolores Pinazo-Duran*

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
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Diabetic retinopathy (DR) is the leading cause of acquired blindness in working age adults worldwide. Biochemical changes in DR contribute to both the microscopic structural and functional changes in the retina. All these alterations result in macroscopic retinal damage that can be assessed by funduscopy. The overproduction of reactive oxygen species (ROS) in the mitochondria is considered a causal link between elevated glucose and biochemical abnormalities in the pathophysiology of DR. Moreover, oxidatively induced pathways also seem to provide positive feedback to ROS production, resulting in a vicious cycle. ROS can directly damage lipids, proteins and DNA, leading to cell death. To make the situation worse, antioxidant defenses are also impaired in diabetes. Otherwise, ROS are involved in the production of inflammatory cytokines and growth factors such as interleukins or vascular endothelial growth factor (VEGF). In addition, ROS not only contribute to the development of DR, but also play a role in its progression when the hyperglycemic insult is controlled. This phenomenon is called metabolic memory.

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