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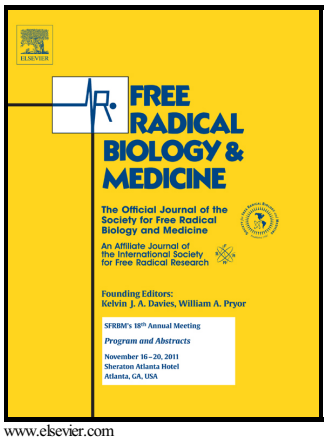

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Ascorbic Acid Repletion: A Possible Therapy for Diabetic Macular Edema?

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*Running title: Ascorbate and macular edema

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Abbreviations: AGE, advanced glycation end-products; eNOS, endothelial nitric oxide synthase; HMGB1, high mobility group box 1 protein; HUVECs, human umbilical vein endothelial cells; iNOS, inducible nitric oxide synthase; NOX, NADPH oxidase; L-NAME (N^{ω}-nitro-L-arginine methyl ester); NO, nitric oxide; RAGE, receptor for advanced glycation end-products; RNS, reactive nitrogen species; ROS, reactive oxygen species; T1DM, type 1 diabetes mellitus; T2DM, type 2 diabetes mellitus; VEGF, vascular endothelial growth factor;

Abstract

Macular edema poses a significant risk for visual loss in persons with diabetic retinopathy. It occurs when plasma constituents and fluid leak out of damaged retinal microvasculature in the area of the macula, causing loss of central vision. Apoptotic loss of pericytes surrounding capillaries is perhaps the earliest feature of diabetic vascular damage in the macula, which is also associated with dysfunction of the endothelium and loss of the otherwise very tight endothelial permeability barrier. Increased oxidative stress is a key feature of damage to both cell types, mediated by excess superoxide from glucose-induced increases in