

Protective Effects of Methyl B12 In Retinal Cells
Protective Effects of Methylcobalamine, A Vitamin B12
Analogue, Against Glutamate-induced Neurotoxicity in
Retinal Cell Culture

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Purpose: To examine the effects of methylcobalamine on glutamate-induced neurotoxicity in the cultured retinal neurons. Methods: Primary cultures obtained from the fetal rat retina (gestation days 16 to 19) were used for the experiment. The neurotoxicity was assessed quantitatively using the trypan blue exclusion method. Results: Glutamate neurotoxicity was prevented by chronic exposure to methylcobalamine and S-adenosylmethionine (SAME), which is formed in the metabolic pathway of methylcobalamin. Chronic exposure to methylcobalamine and SAME also inhibited the neurotoxicity induced by sodium nitroprusside that release nitric oxide. By contrast, acute exposure to methylcobalamine did not protect retinal neurons against glutamate neurotoxicity. Conclusions: Chronic administration of methylcobalamine protects cultured retinal neurons against N-methyl-D-aspartate-receptor-mediated glutamate neurotoxicity, probably by altering the membrane properties through SAME-mediated methylation.