Glaucoma is a progressive optic neuropathy associated with vascular dysregulation and increased intraocular pressure (IOP). The current treatment in IOP reduction is the application of timolol reducing production of aqueous humour.

Aims: This ex vivo study aims to evaluate timolol effect in NO efflux and its derivatives in erythrocytes from glaucoma patients. Methods: The ex vivo effect of AChE modulators ACh and timolol was studied in venous blood of 15 glaucoma patients. Erythrocyte suspensions were incubated with the modulators at 10uM concentration.

Results: No significant differences were obtained in erythrocyte NO efflux and S-nitrosoglutathione (GSNO) concentration in response to ACh or timolol when compared with the no treated erythrocyte of glaucoma patients. Erythrocyte suspensions from glaucoma patients showed higher amount of NO efflux in presence and absence of timolol than those values verified in healthy subjects under the same experimental conditions. Erythrocyte suspensions of glaucoma patients showed higher values of GSNO when in presence of timolol when compared with the values obtained in erythrocyte suspensions with timolol of healthy persons.

Conclusion: We demonstrated that erythrocyte from patients with glaucoma have more availability to liberate NO from erythrocyte both in absence and in presence of timolol than the erythrocytes from healthy persons. The amount of erythrocyte GSNO in presence of timolol is higher in glaucoma patients than in healthy persons.