

Simultaneous determination of timolol maleate and latanoprost tartrate in ophthalmic preparations by derivative spectrophotometry

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Background and Aims: A combination of timolol and latanoprost as ophthalmic solution is indicated for the treatment of open angle glaucoma. Timolol is a beta antagonist and latanoprost is a prostaglandin inhibitor. Ophthalmic solution of these two drugs contains 0.5% of timolol and 0.005% of latanoprost. On the basis of our knowledge there isn't any simple spectrophotometric method for the simultaneous determination of these drugs in ophthalmic solutions. The main aim of this study was to develop a simple and reliable method of analysis of the drugs.

Methods: Normal spectra of the standard solutions of timolol maleate and latanoprost in water in the concentration range of 30 to 70 mg/L and 1 to 15 mg/L were measured, respectively. To find wavelengths that the maximas are not overlapped, spectra were derivatized and amplitude at the proper derivative spectrum were used to construct calibration curve and methods were validated for the analysis of two components.

Results: Second derivative amplitude at 221.9 nm and fourth derivative amplitude at 215.3 nm were selected for the determination of latanoprost and timolol, respectively. RSD% of the repetitive determinations for both intra and inter day runs for latanoprost was less than 3.0% and for timolol was less than 4.1%. LOQ for latanoprost and timolol were 0.87 and 0.61 mg/L, respectively.

Conclusions: Derivative spectrophotometric method is a simple and reliable method for the simultaneous analysis of timolol and latanoprost in combination ophthalmic solutions without any preliminary extractions or pretreatments that can be used routinely in the quality control of the product.

Keywords: Latanoprost; Timolol; Derivative spectrophotometry