Title

Change in the tear film lipid layer thickness after 3% diquafosol ophthalmic solution instillation in normal human eyes

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Abstract

Purpose: Diquafosol is a $P2Y_2$ purinergic receptor agonist, and increased meibomian gland area by repeated application for months in MGD patients. However, little has been shown about the ability of diquafosol to increase lipid production in healthy human. The purpose of this study was to compare the efficacy of 3% diquafosol ophthalmic solution (DQS) with artificial tear (AT) on tear film lipid layer thickness (LLT) in normal human eyes.

Methods: One hundred eyes of 50 normal subjects (mean age 42.0 y-o) randomly received a drop of DQS in one eye and AT in the other. LLT of each eye was quantified by the tear interferometry before (pre) and 15, 30, 60 min after instillation. Change in meibomian gland area (meiboscore) were evaluated.

Results: Significant increases were seen in LLT 15, 30, 60 min after DQS instillation compared with pre LLT (p < 0.0003, <0.0003, =0.003, respectively, Wilcoxon signed-rank test, Bonferroni correction). AT did not increase LLT after instillation. Spearman's rank correlation coefficient revealed that maximum difference between pre LLT and LLT after DQS instillation as well as meiboscore of lower eyelids were correlated with pre LLT (ρ=0.69 and -0.33, p<0.0001 and 0.019, respectively). Age, temperature and relative humidity of the room was not correlated with LLT values.
Conclusion: Topical instillation of DQS increased LLT in normal human eyes.