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Temporal Characteristics of Sodium Fluorescein in the Tear Meniscus

(Article)

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Abstract

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Purpose To observe the emission intensity profile of sodium fluorescein in the human tear film as a function of time and concentration. Methods Twenty-two participants with no dry eye signs or symptoms were randomly allocated to receive 1 μL of either a 2 or 10% concentration of fluorescein to one eye. Images of the inferior tear meniscus were captured at regular intervals over 30 minutes and the process repeated for the other eye with the alternate concentration. Fluorescence intensity was quantified on the basis of the grayscale pixel values in the tear meniscus images. The fluorescein-decay profile over time and between concentrations was determined. Results Peak fluorescence intensity was reached in 3.9 ± 3.0 and 8.7 ± 4.4 minutes after instillation for the 2 and 10% concentrations, respectively. The 10% concentration of fluorescein maintained its peak fluorescence intensity longer than the 2% concentration (about 9 and 2 minutes, respectively). The peak fluorescence intensity was not significantly different between the higher and lower concentrations (44 ± 37 vs. 38 ± 32 units, P =.22). For both concentrations, the observed intensity did not return to baseline levels by the end of the 30-minute observation time. Conclusions The fluorescence intensity of fluorescein in a clinical setting varies with time such that both the onset and duration of maximum brightness are concentration dependent. At low concentration (2%), maximum brightness occurs almost immediately after instillation and lasts about 2 minutes. With a higher concentration (10%), the effective working window is delayed for about 7 to 8 minutes. Irrespective of initial concentration, observable fluorescence remains in the tear film beyond 30 minutes post-instillation. © 2016 American Academy of Optometry.

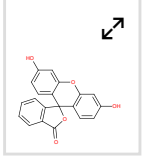
SciVal Topic Prominence

Topic: Diquafosol | Dry Eye Syndromes | Artificial Tear

Prominence percentile: 98.248

Chemistry database information

Substances




Author keywords

decay profile | fluorescein | fluorescence | quenching | tear meniscus

Indexed keywords

Engineering controlled terms:	Fluorescence, Sodium
Engineering uncontrolled terms	Clinical settings, Concentration-dependent, Emission intensity, Fluorescence intensities, Initial concentration, Low concentrations, Sodium fluoresceins, Temporal characteristics
Engineering main heading:	Luminance
EMTREE drug terms:	eye drops, fluorescein
EMTREE medical terms:	adult, controlled study, Dry Eye Syndromes, female, human, lacrimal fluid, male, metabolism, osmolarity, randomized controlled trial, young adult
MeSH:	Adult, Dry Eye Syndromes, Female, Fluorescein, Humans, Male, Ophthalmic Solutions, Osmolar Concentration, Tears, Young Adult

Chemicals and CAS Registry Numbers:

fluorescein, 2321-07-5, 91316-42-6;

Fluorescein; Ophthalmic Solutions

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King-Smith, P.E. , Ramamoorthy, P. , Braun, R.J.
(2013) Investigative Ophthalmology and Visual Science

Fluorescence lifetime imaging microscopy reveals quenching of fluorescein within corneal epithelium

Glasgow, B.J.
(2016) Experimental Eye Research

Ocular surface cooling corresponds to tear film thinning and breakup

Li, W. , Graham, A.D. , Selvin, S.
(2015) Optometry and Vision Science

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