

# Ocular disease leads to decreased concentrations of epidermal growth factor in the tear fluid

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## Abstract

The concentration of epidermal growth factor (EGF) in tear fluid (TF) was recently shown to decrease with increasing tear fluid flow (TFF). The purpose of the present study was to clarify the effects of ocular surface disease on the TF EGF concentrations. Tear fluid samples (n=243) were collected from diseased eyes by means of blunted glass capillaries. The time of collection was measured for each sample, and the tear fluid flow in the capillaries (TFFc) was calculated. The concentration of human EGF (hEGF) was determined using a time-resolved immunofluorometric assay (TR-IFMA). For statistical analysis diagnosis-dependent multi-grouping was performed and the data of the patient groups were compared to the data for a control group. The control material consisted of 271 TF samples collected from healthy eyes before (n=59) and after stimulation of reflex tearing (n=212). It was shown that TF specimens of patients (n=243) contained significantly ( $p<0.001$ ) less EGF (mean 952 pg/ml) than the TF of healthy control individuals before (n=59 samples; mean 6589 pg/ml) or after stimulation of reflex tearing (n=212 samples; mean 2762 pg/ml). The EGF concentration of every patient group was significantly lower than that found in the TF of control individuals both before and during reflex tearing ( $p<0.001$ ). The rate of EGF released with TF during collection did not differ significantly between the various groups of patients or from that released with the TF of normal individuals before induction of reflex tearing. The rate of hEGF released with tear fluid was, however, significantly lower in patients (mean 347 fg/s) than in healthy eyes during reflex tearing (mean 1400 fg/s;  $p<0.001$ ). Ocular surface disease is thus associated with a decreased presence of hEGF in TF.