

Effect of Contact Lens Solutions in Stabilizing the Activity of Tear Lysozyme [Response to Letter]

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Dear editor

We thank Professors Chaurasiya, Khurana, and Soni for their letter regarding our recent publication demonstrating lens solution-dependent stabilization of tear lysozyme. As they note, this in vitro study does not account for all the interactions that occur in the eye during contact lens wear. Contact lens researchers, including manufacturers, frequently rely upon in vitro studies to understand interactions of elements, mechanisms of action and contributions to product safety and efficacy. Our study is not meant as a substitute for clinical studies; it is to identify interactions and mechanisms that can occur during lens wear worthy of further investigation.

As discussed in the article, we chose lysozyme as a model tear protein due to its abundance in natural tears,¹ its antimicrobial properties,² its tendency to deposit on soft contact lenses clinically,³ and the existence of an established assay that indicates the sorbed protein's conformational state.⁴ While interactions between the various components present in the tear film during lens wear and lysozyme undoubtedly affect its stability, a collection of studies from the Centre for Contact Lens Research at the University of Waterloo provides evidence that changes in the activity of lysozyme sorbed on contact lenses in vitro^{2,4,5} are also observed clinically during lens wear.^{2,3,6} Proteins other than lysozyme are also vulnerable to denaturation when exposed to denaturing conditions such as detergents or sorption on a lens, and this may lead to corneal inflammation and discomfort. Laboratory investigations to establish the influence of protein interactions and mechanisms on contact lens deposition continue to be relevant for understanding clinical performance.

Disclosure

The authors declare no additional conflicts of interest regarding this communication beyond those disclosed in the original publication.

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