A Contact Lens that Works with the Tear Film

In DAILIES® AquaComfort Plus® contact lenses, multiple wetting technologies work in tandem to maintain tear film integrity—and all-day comfort. — Kristopher A. May, OD, FAAO

Research over the last decade has expanded the traditional three-layer (mucin/aqueous/lipid) model of the tear film to a more complex continuum. We now see that mucins are both bound to the epithelial glycocalyx and dissolved in the aqueous tears; that proteins, electrolytes, growth factors, and antioxidants come into aqueous solution; and that a thin complex of phospholipids, fatty acids, and esters prevents evaporation.¹

When functioning properly, the tear film reduces friction during blink, protects against infection, delivers nutrients and clears wastes; and, importantly, provides a smooth refracting surface for light entering the eye. Disruption of the tear film can set the stage for the signs and symptoms of dryness to develop.¹

Add a Contact Lens

When placed on the eye, a contact lens splits the tears into a pre-lens tear film and a post-lens tear film. Dividing the tears in this way causes the layer on top of the lens to be thinner and break up more rapidly. This loss of volume and faster breakup, which happen irrespective of lens type, is believed to be due to thinning of the lipid layer.²

A shortened tear film breakup time (TFBUT) can leave parts of the lens' front surface exposed to air, and these dry spots can affect lens performance. Soft contact lenses are dynamic structures: When covered by tear fluid, the hydrophilic heads of the lens polymer chains are stable at the surface of the lens surface to air (which is hydrophobic), the hydrophilic heads of the lens polymer chains are stable at the surface temperature.³

For all tested lenses, the tear prism height, pre-lens non-invasive TFBUT, and ocular surface temperature decreased after longer hours of wear. However, the tear film was found to be most stable on the surface of DAILIES® AquaComfort Plus® contact lenses, whose multi-tier wettability technology outperformed its rivals.⁵

PROVEN PERFORMANCE, BUILT-IN

Wolffsohn and coworkers examined the clinical performance of four daily disposable lens types, all of which had some form of comfort enhancement. Lenses were worn for 8, 12, and 16 hours; and clinical measurements (taken with the lens in place) included pre-lens non-invasive TFBUT, tear prism height, bulbar hyperemia, and ocular surface temperature.⁵

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Because they do not require care solutions or complex cleaning regimens, I like to think of daily disposable lenses as having “built-in” patient compliance. Prescribing DAILIES® AquaComfort Plus® contact lenses—daily disposables with “built-in” comfort and tear film stability—helps keep my contact lens patients happy and healthy.

Kristopher A. May, OD, FAAO, practices at Coldwater Vision Center in Coldwater and Ashland, MS.

REFERENCES