

Impact of cosmetics on tear film : a review article

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Eye cosmetics can disrupt tear film stability and harm ocular surface health. This review summarizes research on how cosmetics interact with the tear film, detailing disruption mechanisms, clinical symptoms, and preventative actions. It examines how formulations, application, and hygiene affect tear film dynamics and dry eye disease, emphasizing the need for understanding these interactions to promote safe cosmetic use.

The tear film, a complex structure composed of lipid, aqueous, and mucin layers, is crucial for maintaining ocular surface health, providing lubrication, and ensuring optical clarity. The increasing popularity of eye cosmetics, including mascara, eyeliner, and eyeshadow, has raised concerns about their potential to disrupt tear film stability and induce ocular surface discomfort.

Lipophilic cosmetic ingredients disrupt the tear film's lipid layer, increasing evaporation (Craig et al., 2021). Surfactants and oils in cosmetics destabilize this layer, while particles and preservatives alter the aqueous layer's osmolarity and electrolyte balance. Benzalkonium chloride (BAK), a preservative, is linked to ocular toxicity and inflammation (Goto et al., 2003).

"Tightlining" eyeliner particularly introduces cosmetic microparticles into the tear film, causing mechanical irritation and disrupting tear dynamics (Gupta et al., 2012). These particles move via diffusion, drift, and mass flow, and some ingredients trigger ocular inflammation, resulting in redness and discomfort due to immune system activation.

Frequent cosmetic use correlates with increased dry eye disease (DED) symptoms like dryness, irritation, and blurred vision. Prolonged wear, improper removal, and inner lid application worsen these symptoms. Cosmetic particles and irritants cause redness, itching, and foreign body sensation, with glitter-based cosmetics being especially problematic (Korb, 2010).

Cosmetic use negatively affects tear film and ocular health, causing DED and irritation. Good hygiene, product selection, and application are crucial for minimizing harm. More research is needed to understand these interactions and create safe cosmetic guidelines.

Keywords: cosmetics, tear film, DED