



The highly specialised re-wetting solution with a cleansing effect on the contact lenses and offering optimal protection for the eye

Design

A special combination ensures not just comfort and safety for the eye but prevents soiling of the contact lens while wearing.

Due to an innovative composition, "lens & lid" reduces the accumulation of contaminants on the contact lens.

"Lens & lid" is especially suitable for re-wetting when there is an increased tendency for the formation of deposits on the contact lenses.

The newly developed "lens & lid" re-wetting solution is well tolerated and protects the contact lens from contaminants while wearing. Due to the optimised composition, the deposition of cell residues and other components of the tear film on the surface of the contact lens is reduced.

Soiling of the contact lenses can occur even while wearing and may create an unpleasant sensation. Removing these lenses for a repeat cleaning is often impossible when wearing. Therefore, a continuous, mild cleansing effect is desired to improve the tolerance of the contact lenses, especially for problematic eyes.

The solution is recommended for people whose contact lenses have an increased tendency to develop greasy surfaces that smear and who experience very long wearing times.

Eyes and contact lenses

The eyes and contact lenses are a controversial topic that has been repeatedly discussed for decades, with the user weighing the gain in comfort and mobility versus the short- and long-term risks of the contact lens and its handling.

With their high concentration of nerve fibres, the cornea and the connective tissue, which are particularly sensitive to foreign bodies, are continuously confronted with the presence of the contact lens as a foreign body.

A normal tear film cleanses not only the surface of the eye but also washes over the surfaces of the contact lens. In predisposed individuals the tear film frequently contains cell residues or lipid components that in fact do not adhere to the surface of the eye

but instead to the surfaces of the contact lenses, leading to annoying sensations and irritations.

Therefore, for safe, comfortable wearing, it makes sense to counteract the formation of deposits in these individuals with a mild cleansing Comfort Solution.

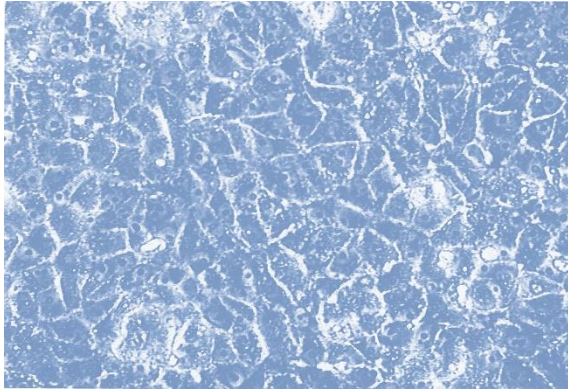
Development principles

It is known from cell biology that cells and tissues react to irritation with an activation of the metabolism and the secretion of cell products. When the tear film is insufficient, more residues from the increase in activity can be deposited on the contact lens surface and from there lead to mechanical, toxic or allergic irritations.

Therefore, in addition to supporting the cell functions of the cornea, a cleansing contact lens solution should prevent the formation of deposits. At the same time, it is necessary, in the undiluted state, that the solution provide effective protection against fungi, bacteria and even acanthamoebae, without having a toxic effect on the eye during long-term use (for example, benzalkonium chloride).

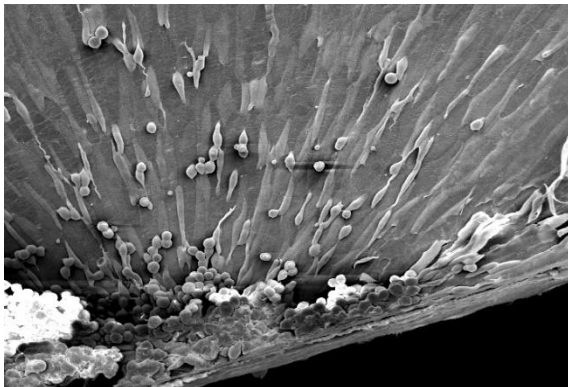
Our investigations

The completely redesigned "lens & lid" Comfort Solution was investigated in various biological systems before its clinical application to achieve the greatest possible safety for the users. In [cell cultures](#)⁴, various epithelial cell types, which would react with great sensitivity to benzalkonium chloride or other preservatives, were investigated with the new solution during short-term ("acute toxicity") and long-term exposures ("chronic toxicity"). We found that the addition of "lens & lid" caused no impairment of the normal cell functions.



*Cell culture:
Even covered by the "lens & lid" solution, the cell culture shows no signs of toxic stress.*

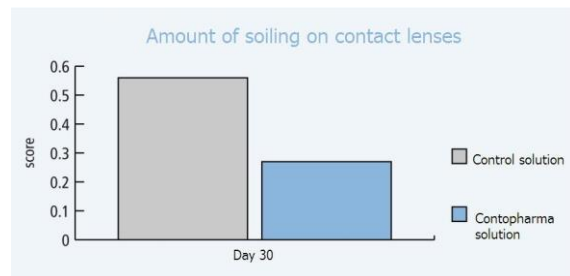
In a model for corneal epithelial wound healing^{1,3}, in which we had already previously found a series of contact lens care products to have a particularly adverse effect on the epithelium², the "lens & lid" solution showed no impairment of the epithelial wound healing⁴. Thus, the potential normal regeneration of the microlesions of the corneal epithelium that recur repeatedly in the contact lens wearer is possible.



*Wound healing:
Experimental corneal wounds heal undisturbed in the short-term, even when covered by the "lens & lid" solution.*

After the extensive testing to establish the biological safety, the effects of the "lens & lid" solution on the physical properties⁴ of all standard contact lens types were investigated. It was found that all measurement results met the relevant ISO standards.

A clinical trial with probands to test suitability in practice⁴ was conducted in a comparison of the "lens & lid" solution versus a comparable solution. The multicentre study was double-blind as well as randomised and thus met the present-day gold standard for clinical trials. Besides the subjective assessments by the probands, comparing eyes and drops on both sides, the eyes were examined at regular intervals over a period of 4 weeks. The prevention of contaminants was confirmed by the investigation of the contact lens surfaces. The analysis of the subjective parameters showed a significant preference for the "lens & lid" Comfort Solution. Side-effects, even minor in nature, have not been observed so far.



*Clinical investigation:
An independant examiner found, when using the Contopharma Comfort Solution, only half as much surface soiling of the contact lenses as with the control solution.*

Summary

In addition to the advances made in recent years in contact lens materials and design, the development of an essentially new Comfort Solution represents an ideal addition. The solution presented here simultaneously achieves the goals of optimal safety, optimal wearing comfort as well as long-term tolerance and tissue protection.

Literature

- 1 C.P.Lin, M. Böhnke: Effect of Fortified Antibiotic Solutions on Corneal Epithelial Wound Healing; *Cornea* 19, 204–206, 2000
- 2 C.P.Lin, J.Y. Chen, M. Böhnke: Influences of Hydrogel Contact Lens Care Solutions on Corneal Epithelial Wound Healing; *Kaohsing Journal of Medical Sciences*, Vol. 14, No.10, 639–643, 1998
- 3 C.P.Lin, M. Böhnke: Influences of Methylcellulose on Corneal Epithelial Wound Healing. *Journal of Ocular Pharmacology and Therapeutics*, Vol. 15, No. 1, 59–63, 1999
- 4 data on file: Contopharma AG, Interlaken

New developments can be achieved today only through the networking of existing resources. For the design of the new "lens & lid" Comfort Solution, basic knowledge from cell biology and corneal physiology was incorporated into the possibilities available to the pharmacological manufacturer. Thus, an optimal, thoroughly investigated, well-tolerated and effective Comfort Solution was developed with the instruments from basic research (cell culture, in-vitro testing, physical measurements) and clinical trials.

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