



The conservation and rinsing solution with optimal viscosity for all common types of rigid gas permeable contact lenses

Concept

The Contopharma "i-comfort!" solution is used for storing and rinsing all common types of rigid gas permeable contact lenses. Due to a specific humectant and a film-forming agent, optimal gliding ability of the contact lenses on the eye is achieved upon insertion.

A reliable disinfection action for rigid gas permeable contact lenses is achieved already two hours after being placed in the solution. The Contopharma "i-comfort!" solution allows flexible and convenient ease of handling with good tolerance as well as optimal wetting of the contact lens surfaces when inserting as well when wearing.

The "i-comfort!" contact lens care solution is recommended for all common types of rigid gas permeable contact lenses, but not for soft hydrophilic contact lenses. It is particularly recommended for the conservation of scleral or Ortho-K lenses, preservative-free rinsing is advantageous.

The "i-comfort!" solution is the result of research and development as well as intensive collaboration with recognised contact lens specialists. The new solution is a synthesis of many years of practical experience relating to contact lenses and their care and the persistent efforts to optimise lens care for wearers without making any concessions in terms of safety and comfort for the eye and contact lens system.

Eyes and contact lenses

The long-lasting tolerance of contact lenses on the eye depends not only on the physiological situation but also on the compliance of the users. An important aspect is the type of application and, above all, the care. Besides the individual coordination of product use, contact lens type and user circumstances, the selection of optimal care is equally important.

By using the solution, secondary immune reactions (redness of the eye, GPC and others) should be minimized.

Development principles

After completing the cleaning, the storage and rinsing solution should allow a good wetting of the contact lenses by reducing the surface tension.

New, basic knowledge about the manufacture of materials as well as contact lenses has served as the basis for the development of an effective storage and rinsing solution that is well tolerated. The new solution produces optimal wetting surfaces of the contact lens without affecting their physical properties, which is of particular significance for surface-treated materials.

What are the particular properties of the "i-comfort!" solution?

Protects from deposits:

A complexing agent and an organic solvent counteract the ionic and non-ionic deposition tendencies of foreign substances on the lens surfaces.

Rinses, disinfects and preserves:

The microbicide substance employed ensures a low germ count during the solution's use period. It is odourless, colourless, hypoallergenic and is not absorbed by the tissue.

The lenses are freed from contaminating microorganisms by the disinfecting action of the solution overnight or after at least 2 hours in the solution.

The "i-comfort!" solution maintains the surface and matrix structure of the lens.

It moisturises:

To enhance the wearing comfort, the surfaces are hydrophilised by water-binding and humectant substances, which also promote the stability of the tear film. Improved wetting of the lens surfaces is achieved while wearing and during conservation.

Our investigations:

Preclinical studies

The completely redesigned "i-comfort!" solution was investigated in various biological systems to guarantee the user the greatest possible safety regarding the disinfecting action and the anticipated tolerance on the eye.

In epithelial cell cultures the solution was investigated with short-term and long-term exposures to various chemicals that react in a very sensitive manner. At physiological temperatures, any toxicity of the “i-comfort!” solution in the cell culture could be completely excluded.

In a multi-centre, randomised study using various solutions, the ideal viscosity of the solution was defined. The rinsability of the cleaning solution with the dissolved foreign substances must be guaranteed. Optimal moistening of the lens surfaces and the “cushioning effect” is of great significance to achieve the high spontaneous tolerance upon the insertion of the lens.

Verification of the physical properties

Before the comprehensive application study, possible effects of the “i-comfort!” solution on the physical properties of common types of rigid gas permeable contact lenses were investigated by means of a precisely defined measurement protocol. All measurement results met the requirements of the relevant standards¹. The lens surfaces showed no changes in their structure or quality during the measurement period.

Studies regarding the application

An application study with probands to test suitability in practice¹ was conducted. The multi-centre, randomised study met the present-day gold standard for clinical trials and showed that, besides good tolerance and a high comfort level, the solution was well accepted by the test subjects.

Over a period of 120 days 60 wearers of rigid gas permeable contact lenses used the new “i-comfort!” conservation and rinsing solution.

Besides the subjective evaluation of comfort and tolerance by the probands, the contact lenses that had been worn as well as the physiological circumstances of the eye were also assessed objectively by the clinical investigators.

At the end of the test phase, an examination of the eyes with a slit lamp showed no significant changes.¹

The comfort as well as the quality of vision were found by a majority of the probands to be better or just as good when compared with the previously used conservation and rinsing solution.

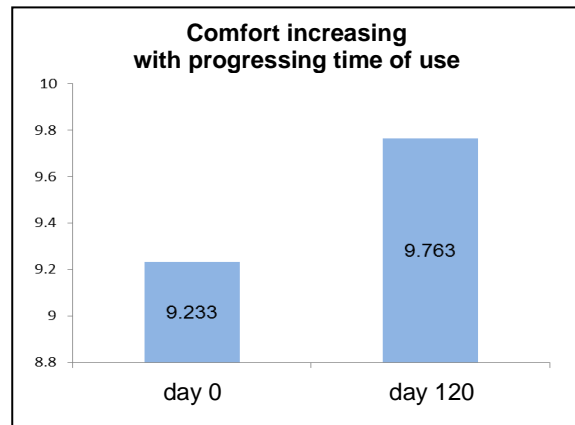


Chart: The wearing comfort determined 3 hr after the insertion of the contact lenses increased to a statistically significant 9.763 on a scale from 0-10 after 120 days of use ($P < 0.001$, Wilcoxon Signed Rank Test)¹.

The “i-comfort!” conservation and rinsing solution tested in the application study convinced not only the users but also the contact lens specialists. The statistical assessment showed values¹ that were at least equally good in the comfort comparison with six commercially available contact lens solutions.

Further information

For lubrication, CONTOPHARMA Comfort Solutions are recommended:

- If the tear formation is low, the “drop&see” solution supports the cell functions of the cornea with its balanced active substances.
- The “lens&lid” solution provides additional protection of the contact lens surfaces against contaminants due to its optimised composition.

Besides the nutrients, potassium, calcium and magnesium, both of these solutions have a high percentage of hyaluron for cell regeneration.

In addition to the fundamental improvements introduced with the new comfort solutions from CONTOPHARMA, the “i-comfort!” solution has addressed the special needs and requirements of the wearers of rigid, gas permeable contact lenses.

Confection

- 100 ml with lens case
- 250 ml with lens case

Literature

¹ data on file: Contopharma AG

New developments can be achieved today only through the networking of existing resources. For the design of the new “i-comfort!” rinsing and storage solution new basic knowledge about the manufacture of materials as well as contact lenses and their finishing were transformed into new possibilities for pharmacological production. Therefore, an optimal, research-based, compatible and effective solution was developed using the instruments of manufacturing techniques (chemical-physical processes, in-vitro trials, physical measurements) and the various application studies.

Development team

- Prof. Dr. R. Schäfer, Institut Schäfer AG, Bubendorf
- Laboratorium Dr. G. Bichsel AG, Interlaken
- Contopharma AG, Interlaken
- Techno-Lens SA, Lausanne
- U. Businger, O.D.- Luzern
- R. Eschmann, M.Sc. Optom., Bern
- L. Neuweiler, M.Sc. Optom., Bern

Adjunct investigators

- Aeschmann Optik, Solothurn
- Eschmann - Contactlinsen AG, Bern
- Keller Optik, Schwyz
- Pfarrer Contactlinsen AG, Bern
- Prima Vista Augenoptik, Lyss
- Probst Optik, Thun
- Spörri Optik AG, Biel
- Wolf Contactlinsen-Studio, München