"PRESBYCUSTOM" NEW CUSTOMIZABLE CONTACT LENSES TO CORRECT PRESBYOPIA

TECNOLOGIA PATENTADA

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RESUM

The research group of Optics and Visual Perception of the UNIVERSITY OF ALICANTE, with the collaboration of the company LABORATORIOS LENTICON SA, has developed a new multifocal scleral contact lens to compensate presbyopia (age-related near vision deterioration) which has the peculiarity of being optically customizable according to the specific needs of each patient.

The new contact lens has been developed combining different types of stable optical aberrations that have allowed us to optimize the depth of focus, providing excellent levels of visual quality as well as very comfort wear, easy fitting process and greater stability than current multifocal contact lenses. Some prototypes have been manufactured at laboratory level and they have been validated successfully in patients. Currently, CE marking is being processed which will allow its international commercialization. We are looking for companies interested in acquiring this technology for commercial exploitation.

AVANTATGES I ASPECTES INNOVADORS

ADVANTAGES OF THE TECHNOLOGY

The new multifocal scleral contact lens made of oxygen permeable rigid material and with optical personalization for each patient, offers the following **advantages** over the designs currently on the market:

1. It rests only on the conjunctival-scleral surface (this lens *does not bear at any point on the surface of the cornea*), minimizing the risk for continuous friction between the lens and the cornea, allowing a fitting providing maximum comfort.
2. It presents a great variety of options to induce stable optical aberrations according to the needs and the optical peculiarities of the patient's eye.
3. It allows an optimization of the depth of focus leading to excellent levels of visual quality.
4. In the case of patients with a peculiar pupil dynamics or a very marked kappa angle, the contact lens can be modified to adapt it to these factors, thus achieving an even greater optimization of the results.
5. The scleral support in the 360º confers a greater stability to the lens, minimizing the movement and the decentration, and therefore contributing to an optimum vision for both near and far.
6. It takes into account the naso-temporal asymmetry of the profile of the corneo-scleral junction, which minimizes both the decentration and the movement of the lens.
7. The fitting of the contact lens is easy, personalized and specific for each patient, providing great levels of comfort and excellent visual quality.
8. The high failure rates provided of current multifocal contact lenses are overcome with this lens.

INNOVATIVE ASPECTS OF THE TECHNOLOGY

A multifocal scleral contact lens has been developed to compensate presbyopia, which is optically customizable according to the specific needs of each patient's eye.

Its development has been based on the optimization of depth of focus by combining different types of optical aberrations that are stable as no decentrations of the lens are expected due to the high stability of the bearing of the lens.

For such purpose, a wide variety of Zernike third to sixth order optical aberration induction options has been used not only according to the patient's near addition, but also according to the patient's kappa angle as well as the pupil size under different lighting conditions.

Therefore, the design has been managed to optimize the depth of focus while maintaining excellent levels of visual quality.

This novel contact lens is easily fitted, even in those patients who have a peculiar pupil dynamics or a marked kappa angle.

In addition, the optical center of this lens can be decentrated as a function of the kappa angle of the patient, thereby preventing high levels of comatic aberration in patients with a large kappa angle (for instance, in nearsighted patients).

Unlike virtually all current multifocal contact lenses, which work with induction of primary spherical aberration, it has been shown that the combination of other types of optical aberrations may induce significant increases in depth of focus without significant deterioration of the visual quality.

APLICACIONS DE L'OFERTA

The present invention is framed in the field of Optics. In particular, it relates to a multifocal scleral contact lens to compensate presbyopia. It is optically customizable according to the specific needs of each patient.

COL·LABORACIÓ BUSCADA

It is looking for companies interested in acquiring this invention for commercial exploitation through:

- License agreement.
- Development of new applications.
- Technology and knowledge transfer agreements.
- Carry out technical reports and scientific advice for companies.
- Provide specific training tailored to the needs of the company.Provide technological support in those techniques that require high training or sophisticated instruments that are not available to the requesting company.
- Exchange of personnel for defined periods of time (for learning a technique, etc.).
- Rental of internal equipment to clients who wish to carry out their own tests (own infrastructure of the Department of Optics, Pharmacology and Anatomy, or Technical Research Services (SSTTI) of the University of Alicante).