

# Changes in Corneal Structure with Continuous Wear of High Dk soft contact lenses. A pilot study.

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## ABSTRACT

**Purpose:** Despite numerous studies have considered the effects of high-Dk soft contact lenses extended wear on ocular physiology, little attention has been paid to the impact of such lenses on central or peripheral corneal thickness and curvature. The present study aims to report the time course of changes in corneal thickness and curvature, which accompanies the 30-night continuous wear of new silicone-hydrogel soft contact lenses, in a population neophyte in a longitudinal study.

**Methods:** Twelve eyes from six subjects wore high-Dk lotrafilcon (Dk=140) on a 30-night replacement schedule for 12 months. Topographical measurements of corneal thickness and curvature were taken. The same parameters as well as anterior and posterior elevation maps were monitored for an additional period of 3 months after lens removal.

**Results:** An almost homogenous increasing in corneal ~~radius of~~ curvature was detected for all the locations studied, being statistically significant for the 4 mm cord diameter area. This effect was associated with a progressive thinning effect for the central cornea while mid-peripheral and peripheral areas did not display such a thinning effect during continuous wear. These effects are still evident for the central cornea 3 months after contact lens wear discontinuation.

**Conclusions:** Continuous wear of high Dk silicone-hydrogel contact lenses is associated with clinically appreciable changes in topographical corneal curvature while only a reduction in corneal thickness is appreciated in the central area. This effects seems to be a result of mechanical pressure induced by this hybrid hyper permeable materials characterized by a higher elasticity modulus.

**Key Words:** High-Dk/t soft contact lenses, corneal thickness, topographic pachometry, corneal topography, extended wear, silicone-hydrogel lenses, continuous wear.