Uv-Blocking Silicone Hydrogels Prevent Uv-Induced Damage to the Anterior Segment

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INTRODUCTION

• Accidents and chronic exposure to Uv-exposure can lead to various pathological outcomes.
• The type and extent of damage from Uv-volta energy is, in general, related to the wavelength, duration, intensity, and size of the exposure.
• Sphincter degeneration, Uv-induced, parasite, and post-irradiation.
• Crystaloid case study (air-polluted, waste).

METHODS

• Treatment groups were as follows (n = 4 per treatment group):
  1. Approved by Institutional Animal Care and Use Committee
  2. Allowed to recover for 2 days.
  3. The contralateral eye of each rabbit was patched without rabbits (2.5-3.0 kg).
• Included as positive controls and protein molecular weight
  1. High resolution NMR spectra were recorded on a NMR spectrometer (Bruker DRX800; Biospin GmbH, Rheinstetten, Germany).
  2. The data collected was analyzed for its correlation to the exposure and control group.

RESULTS

• Corneal Changes
  1. Exposed senofi lcon A eyes vs. corresponding eyes with patch (Bruker DRX800; Biospin GmbH, Rheinstetten, Germany).
  2. A 500 µL solution of 0.25 mM sodium-3'-trimethylsilypropionate-
  3. The corneal changes noted in the exposed lotrafilcon A wearing group were compared to the corneal changes noted in the senofilcon A group.

• Crystalline Lens Changes
  1. MMP-2 was significantly (p = 0.03) increased in the lotrafilcon A group compared to the senofilcon A group.

• Figure 2.
(BC) MMP-9 was significantly (p = 0.03) increased in the exposed corneas wearing lotrafilcon A contact lenses compared to the senofilcon A contact lenses.

• Figure 3.
(A) In UV exposed corneas, MMP-2 was significantly (p = 0.03) increased in the lotrafilcon A group compared to the senofilcon A group.

• Figure 4.
(A) Exposed senofilcon A test eyes compared with the unexposed (patched) eyes.

• Figure 5.
(A) Exposed senofilcon A test eyes compared with the unexposed (patched) eyes.

• Figure 6.
(A) Exposed lotrafilcon A test eyes compared with the unexposed (patched) eyes.

DISCUSSION

• Corneal Findings
  1. UV-B radiation makes up small percentage of the solar spectrum but
  2. The LEC were protected from apoptosis in the senofilcon A group compared to the lotrafilcon A group.

• Crystalline Lens
  1. The filtering effect is mainly related to its high ascorbic acid concentration, operating as an antioxidant.13-16

• Aqueous Humor
  1. Aqueous humor is suggested to play a protective role in the pathogenesis of cataract, acting as a filter against both Uv- and non-lens wearing group following irradiation.

• CONCLUSIONS
  1. This data supports the hypothesis that blocking Uv-exposure can
  2. Aqueous humor from cataract patients has shown decreased ascorbate and compared to normal controls.17

• REFERENCES

• CONCLUSIONS
  1. These results indicate that Uv-blocking contact lenses show similar protective findings in the cornea and crystalline lens as compared to non-UV absorbing contact lenses and exposed eyes.

• This is supported by data from previous studies that have demonstrated that Uv-absorbing contact lenses can minimize Uv-induced cataract damage.26-32

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