

SUBJECTIVE AND OBJECTIVE MEASURES OF THE USE OF ACUVUE OASYS TRANSITIONS CONTACT LENSES TO REDUCE GLARE AND LIGHT SENSITIVITY

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Introduction

- Photochromic lenses are defined as lenses which darken in color based on how much of a specific type of light of a sufficient intensity comes into contact with it
- Acuvue Oasys with Transitions are the first contact lenses on the market to darken upon ultraviolet light exposure
- These lenses are being branded as a viable substitute for those who want freedom from the burden of wearing traditional transition spectacle lenses or sunglasses while being active outdoors.
- Do these lenses truly block harmful ultraviolet rays and cut down on glare and light sensitivity as much as traditional Transitions spectacle lenses or sunglasses? Where do they rank among other ophthalmic lenses in terms of light transmission and high frequency/low wavelength light protection?

Methods

- We collected both subjective feedback and objective measures regarding light transmission through Acuvue Oasys two week contacts, Acuvue Oasys Transition two week contacts, Plano transitions spectacle lenses, and polarized sunglasses
- A total of 28 participants signed up for the study who were then selected to one of the four experimental groups. Preliminary exams were performed on each subject including a pre-experiment survey, visual acuities without wearing the assigned lens, and a contact lens fit/anterior segment health evaluation. The survey consisted of questions regarding light sensitivity, glare, eye-strain, and clear and comfortable vision in various indoor and outdoor settings. Each subject was to wear their respective lenses consistently for two weeks, as much as their physical demands would allow. At the end of two weeks, a post-experiment survey with the same questions was sent out to all participants. Subjective responses between the groups were collected and analyzed concerning the various lenses.
- Objectively, each of the four lenses were tested using a Beckman DU 640B Spectrophotometer to measure their spectrum of light transmission
- Pre and post-experiment survey responses were analyzed using SPSS 25, Shapiro-Wilk testing, Kruskal-Wallis testing, Mann-Whitney U testing, and Wilcoxon Signed Ranks testing.

Results

- Acuvue Oasys transition contacts group showed higher rates of light sensitivity and glare when driving at night prior to the study compared to clear contacts group.
- Transitions spectacles group showed higher rates of experiencing light sensitivity when driving at night prior to the study compared to clear contacts group.
- Acuvue Oasys transition contacts group showed higher rates of experiencing glare when driving at night prior to the study compared to polarized sunglasses group.
- Clear contacts group experienced higher light sensitivity walking around streets/parks compared to transitions spectacle group post-completion
- Acuvue Oasys transition contacts group experienced higher light sensitivity around water-settings and indoors with bright lighting compared to the transitions spectacles group post-completion
- No significant differences were found between pre-survey and post-survey questionnaire results in the Acuvue Oasys transition contact lens group

Objective Data

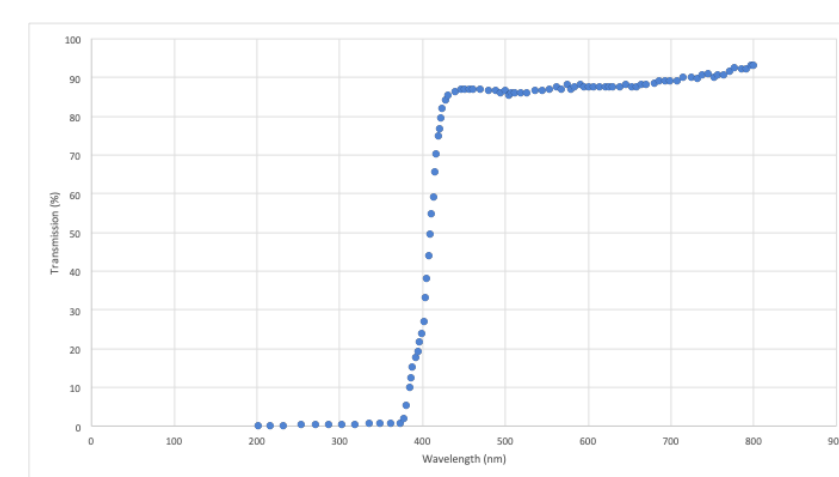


Figure 1: Transmission spectrum for an inactivated -2.00D Acuvue Oasys Transition contact lens

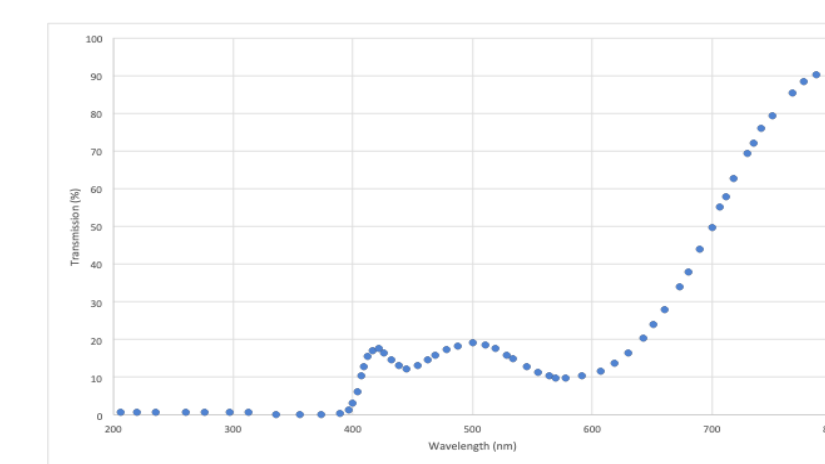


Figure 2: Transmission spectrum for an activated transition spectacle lens

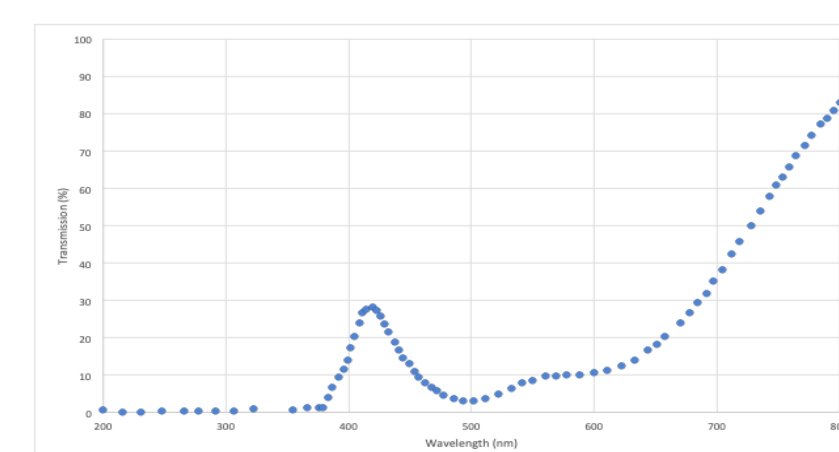


Figure 3: Transmission spectrum for an activated -3.00D Acuvue Oasys Transition contact lens

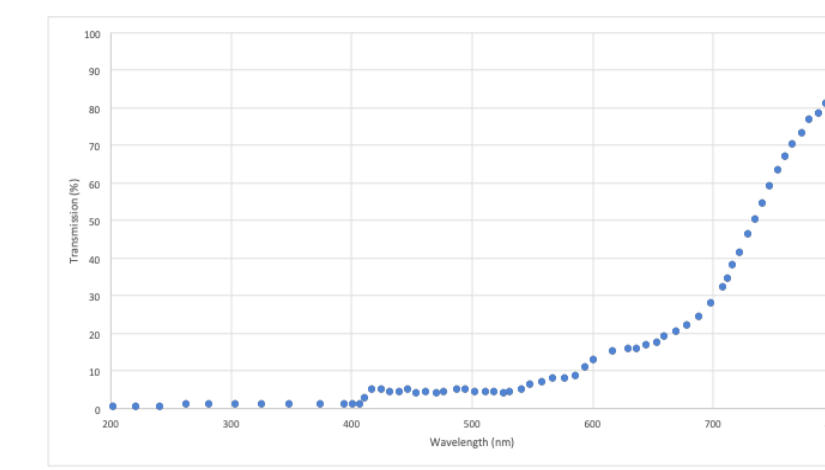


Figure 4: Transmission spectrum for Maui Jim polarized sunglasses

Conclusions

- Objectively, the results indicate that all the different modalities provide protection against low-wavelength ultraviolet light. This being the case, Acuvue Oasys Transition contacts showed more transmissibility than the other photochromic lenses in the shorter wavelength spectrum.
- Those in the Acuvue Oasys with Transitions group were more susceptible to light sensitivity and glare when driving at night compared to those in the clear contact lens group according to pre-survey results.
- Transitions spectacles may do a better job at decreasing light sensitivity compared to Acuvue Oasys Transitions lenses in various settings.
- There was no perceived improvement in symptoms such as light sensitivity and glare in any type of setting when wearing the Acuvue Oasys Transitions contact lenses between pre and post survey results.
- Future studies involving these contacts should try to have more subjects, include subjects with a spherical prescription only to eliminate astigmatism as a factor, and better monitoring of compliance.

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