Current Combination ("piggy-back") System Questions:

1. How does the transmissibility of the carrier lens (e.g., of silicon-hydrogel (SH)) affect post-lens epithelial oxygenation?

2. Does the Blink Alter Their Effective Oxygenation of the Epithelial Surface?

B. Fitted Model

Observations/Conclusions

1. Differences in physiological response (due to corneal surface oxygenation) between static (no Blink) and dynamic (Blink) were best seen among the cases within the highest Dk carrier lens (PureVision®) series, whereas:
   - (a) the lowest Dk (FL100 cap) + carrier case benefited most from presence of the Blink;
   - (b) the thickest, high Dk cap lens (FL151.60) + carrier case showed no difference between non-blink and Blink conditions; and
   - (c) the highest Dk (FL115.12) cap + carrier case showed an actual decrease in epithelial oxygenation with the Blink vs. without (although both results leveled higher than any seen in either (a) or (b)).

2. Oxygenation outcomes between cases 1(c) and 1(b) appear due to their thickness differences (0.22 vs. 0.21 mm), but also to their differences in transmissibility (Dk/t’s = 25 vs. 110, + carrier). The very flexible modulus of the 1(c) combination may have resulted in “binding” and reduced tear exchange with the Blink.

3. Oxygenation outcomes between cases 1(c) and 1(l) may be due to their thickness differences as well (0.20 vs. 0.25 mm), but also to their differences in transmissibility (Dk/t’s = 126 vs. 110, + carrier). The very flexible modulus of the 1(c) combination may have resulted in “binding” and reduced tear exchange with the Blink.

4. The remaining (Cooper and Optima) vehicle systems showed no measurable differences between Blink and non-Blink outcome (All were very low), and in some of the cases described differences between Blink and non-Blink outcomes found to be statistically significant (p-range for all cases = 0.283 to 0.504, as determined on the at-randiate uptake rate data).

Methods

- **B. Fitted Model**
- **A. Single Lens Mean Data**
- **A. peDk/t Values for the PureVision Series**
- **B. peDk/t Values for the Cooper/PermaLens Series**
- **C. peDk/t Values for the Optima Series**

Results

- **Transmissibility (Dk/t)**
- **More Hypoxic Stress**
- **Less Hypoxic Stress**

References

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