**A PILOT STUDY COMPARISON OF SCOTOPIC PUPIL SIZE USING THE COLVARD PUPILLOMETER AND THE MEIBOX INFRARED MEIBOGRAPHER.**

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**BACKGROUND:** Scotopic (dark adapted) pupil measurements are important for determining surgical candidacy for LASIK/PRK or presbyopia correcting intraocular lenses. Larger scotopic pupils are correlated with visual side effects, including halos, starbursts and glare. The Colvard pupillometer (CP) is the gold standard method of pupillometry. However, the device lacks image capture and is subject to test/retest variability. Previous studies have demonstrated the potential of infrared cameras to obtain accurate and reproducible measurements. This study investigated the accuracy and reproducibility of the Meibox infrared Meibographer (Box Medical Solutions) , against the Colvard Pupillometer (Oasis Medical Inc).

**METHODS:** 17 participants (n=34) ages 18-55 years old were recruited from our office, a private ophthalmology clinic in Niskayuna, NY. Participants with pupillary abnormalities were excluded. After a two-minute dark adaptation period, the left and right pupils were each measured three times sequentially with the Meibox and again with the CP. Measurements were compared for significance using a paired t-test.

**RESULTS:** Mean scotopic pupil size (SPS) measured by CP was 6.48 mm **±** 0.24 (range: 4.5mm - 8.5mm) and 6.42 mm **±** 0.32 (range: 4.5 mm - 8.0 mm), right eye and left eye, respectively vs. 6.28 mm **±** 0.18 (range: 4.09 mm - 8.29 mm) and 6.30 mm **±** 0.17 (range: 4.01mm - 8.06mm) with the Meibox, respectively. Mean SPS revealed no significant difference between the Meibox and CP (OD: p=0.32; OS: p=0.66). Variation between reads within instrument measurement sets was significant (OD: p=0.04; OS: p=0.02). Mean difference in variation was greater in CP by 0.1 mm and 0.18 mm over the Meibox.

**CONCLUSION:** The Meibox resulted in similar SPS as the CP, but with less test/retest variability than CP. The CP overestimated SPS vs. Meibox but these results are not statistically or clinically significant.

**KEYWORDS:** *Scotopic, Pupillometry, Colvard, Meibox, Infrared*