Ocular surface tolerability of prostaglandin analogs in patients with glaucoma or ocular hypertension
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Purpose: There has been increased attention on the potential impact of the preservative benzalkonium chloride (BAK) on the ocular surface. This study was designed to compare the ocular surface tolerability of once daily latanoprost 0.005% (preserved with 0.02% BAK) bimatoprost 0.01% (preserved with 0.02% BAK), and travoprost 0.004% (preserved with Sofzia).

Methods: Randomized, multicenter (16 sites), investigator-masked, parallel-group study enrolled patients with open angle glaucoma or ocular hypertension who had been on latanoprost monotherapy for at least 4 weeks. At baseline, patients were randomized to once daily latanoprost (n = 55), bimatoprost (n = 56), or travoprost (n = 53) monotherapy for 3 months. Follow-up visits were at week 1, month 1, and month 3. The primary outcome measure was physician-graded conjunctival hyperemia (scale 0 to 3) at month 3. Secondary outcome measures including corneal staining (scale 0-3) and tear break-up time (TBUT).

Results: There were no significant differences in conjunctival hyperemia, corneal staining, or TBUT at baseline among the three groups. At month 3, there were no statistically significant among-group differences in mean conjunctival hyperemia or change from baseline among treatment groups (p > 0.859). At week 1, there was a statistically significant among-group difference in mean change from baseline in hyperemia (0.00 for latanoprost, +0.04 for bimatoprost, and +0.20 for travoprost, p = 0.018). At month 3, 4 latanoprost patients, 3 bimatoprost patients, and 6 travoprost patients experienced > 0.5 increase in hyperemia. There were no statistically significant among group differences in mean corneal staining, mean TBUT or change from baseline at any visit.

Conclusions: Despite differences in preservatives, there were no significant differences among bimatoprost (preserved with 0.02% BAK), latanoprost (preserved with 0.02% BAK), and travoprost (preserved with Sofzia) in objective clinical measures of ocular surface tolerability after 3 months of treatment.