

Reliable and Reproducible Dosage Delivery of Triamcinolone Acetonide Prepared for Intravitreal Injection

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PURPOSE

The empiric dose of 4mg in 0.1mL triamcinolone acetonide (TA) administered via intravitreal injection has demonstrated promising results for macular diseases. Variability of the actual dose delivered has been a concern with the use of Kenalog®-40 suspension. Herein, we evaluate the reproducibility of the dose administered after various manipulations of Kenalog®-40 suspension.

METHODS

In Trial 1, unwashed TA was evaporated to dryness and a known 40mg was reconstituted in 1mL balanced salt solution (BSS). An aliquot of 0.2 mL was aspirated and the final 0.1mL was dispensed and weighed after drying. Trial 2 used washed TA and mirrored Trial 1. Trial 3 assessed unwashed TA evaporated to dryness and a known 40mg was reconstituted in 1mL with 0.5mL aspirated into the syringe and the first and last 0.1mL aliquots were dispensed and weighed after drying. Trial 4 used 0.5mL TA aspirated directly from Kenalog®-40 vials evaluating the first and last 0.1mL aliquots dispensed without syringe inversion. Trial 5 mimicked Trial 4 with multiple syringe inversions before dispensing.

RESULTS

The mean(SD) drug yield from trials 1 and 2 were 4.14(0.67) and 4.13(1.10). There was no statistically significant difference between the techniques of TA preparation from a known quantity of washed or unwashed drug powder when a small volume of TA suspended in BSS was aspirated from the vial. The mean (SD) yield from the first 0.1mL aliquot dispensed in Trials 3, 4, and 5 were 3.79(0.78), 3.79(0.53), 3.91(0.74) whereas the mean(SD) from the last 0.1mL aliquot dispensed were 6.05(1.73), 8.73(1.25), 6.05(1.43), respectively. A statistically significant difference was noted between the TA dose administered from the first vs. last 0.1mL aliquot dispensed in trials 3, 4, and 5. Although multiple syringe inversions produced no statistically significant difference in the dose administered from the first 0.1mL aliquot dispensed, syringe inversion significantly influenced the dose administered from the last 0.1mL aliquot dispensed ($p=0.0005$).

CONCLUSION

A 4mg dose of intravitreal TA can be reproducibly prepared by withdrawing a small volume into the syringe initially and dispensing the last 0.1mL aliquot. Inverting the syringe prior to intravitreal administration also optimizes dosing accuracy and precision. This data provides additional guidance to clinicians regarding the preparation of intravitreal TA in the office.