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Long-term Retinal Toxicity of Intravitreal Commercially-available Preserved Triamcinolone Acetonide (Kenalog) in Rabbit Eyes

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PURPOSE
To investigate whether IVTK produces histological or electroretinographic changes in the rabbit retina up to 3 months following injection.

METHODS
Ten Dutch-belted rabbits were injected with 4mg/0.1 ml of Kenalog in one eye and 0.1 ml balanced salt solution in the fellow eye. Simultaneous bilateral dark-adapted electroretinography was performed 2 weeks and 12 weeks after injection in 10 and 6 rabbits, respectively. Saturated a-wave amplitude, maximal scotopic b-wave amplitude, and individual a-wave and b-wave amplitudes of Kenalog-injected and control eyes were compared at 2 and 12 weeks following injection. Light microscopy was performed on both eyes of 3 animals, 3 months after injection. Immunohistochemistry was performed with antibodies recognizing vimentin and HAM-56, markers of glial cells and macrophages, respectively.

RESULTS
There was no significant difference in the saturated a-wave or maximal scotopic b-wave amplitudes between the BSS-injected eyes and the IVTK-injected eyes at 2 weeks ($p=0.95$ and p-0.56 respectively) and 12 weeks ($p=0.82$ and $p=0.17$) after injection. Light microscopy and immunohistochemistry disclosed only rare macrophages in the vitreous of IVTK-injected eyes. The retinal layers, retinal pigment epithelium and choriocapillaris in treatment and control eyes were unremarkable.

CONCLUSION
No demonstrable electroretinographic or histologic changes suggesting immediate or delayed toxicity of IVTK was noted. This supports the clinical safety of IVTK.