

## **Elution of Vancomycin/Amikacin/Steroid from Solvent-free Biodegradable Scleral Plugs**

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The purpose of this report was to develop solvent-free biodegradable scleral plugs for vancomycin, amikacin and dexamethasone delivery for endophthalmitis treatment. To fabricate a biodegradable plug, polylactide-polyglycolide copolymers were pre-mixed with the drugs. The mixture was then compression molded and sintered to form a scleral plug of 1.4mm in diameter. An elution method was utilized to characterize the in-vitro release characteristics of the antibiotics and the steroids over a 14-day period. The HPLC analysis and bacterial inhibition test showed that biodegradable scleral plugs released a high concentration resulting in significant activity of vancomycin and amikacin (well above the minimum inhibition concentrations) and dexamethasone in vitro, for the period of time needed to treat intraocular infection. A bacterial inhibition test was carried out to determine the relative activity of the released antibiotics. The activities of the eluted vancomycin and amikacin ranged from 69% to 89% and from 66% to 88% respectively. In addition, the experimental result suggests that one will be able to reduce the drug release rate and prolong the total release period of the plugs by adopting a lower antibiotic/steroid to polymer ratio, increasing the sintering temperature, or increasing the compression pressures.