

ABSTRACT I.G.S BARCELONA 2003

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Purpose: To assess the safety of a novel Titanium Sapphire laser for trabeculoplasty in an animal model.

Methods: The left eye of 6 healthy cats was treated over 180 degrees, while the right eye was used as a control. A Ti:Al₂O₃ laser (790nm, four to five 200ns pulses, 7 microseconds pulse train, 200um spot, SOLX, Boston, MA) producing energies of 8 to 84mJ was used. Before treatment and at 1 hour, 1, 7, 28, 35 and 60 days post treatment, intraocular pressure (IOP) and pachymetry measurements, biomicroscopy and gonioscopy were done. Scanning electron microscopy (SEM) of the angle was performed in selected eyes.

Results: Energies of 10 to 30mJ were sufficient to cause depigmentation. Eyes treated with higher energies had a slight inflammatory reaction that resolved in 24 hours. The preliminary results of this ongoing study showed the IOP to decrease by about 30% at 1hr and at 1 day and to slowly taper to normal by 2 to 5 weeks. The depigmented spots slightly increased in size with time and some became confluent. No physical alteration of the trabecular meshwork or other structures of the eye could be found with SEM.

Conclusions: Titanium Sapphire laser trabeculoplasty selectively altered trabecular cells containing melanin and was found safe to eye structures and, in this animal model, was also found effective at initially decreasing the IOP.

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