



## Intraocular Pressure in BN Rats Subjected to Episcleral Caution

### Overview

Glaucoma may be surgically induced in rats by laser cautery of the limbus of rats. Most rat strains are susceptible to this procedure and at CBI, Brown Norway and Sprague Dawley rats are commonly used. The procedure is conducted under general anesthesia and Indocyanine Green Dye is injected intravenously to enhance the laser photocoagulation immediately prior to surgery. Immediately following the surgical procedure, increases in the IOP are present. Rats are permitted to recover overnight and the following day, they can be segregated into uniform groups and placed on study. Typical studies occur on Day 1 and may continue for a week or more.

### Optimization Study Design

The purpose of this Optimization Study was to assess the IOP changes over a week following unilateral laser photocoagulation in Brown Norway versus Sprague Dawley rats.

- Ten rats per group (Brown Norway and Sprague Dawley were compared)
- Laser photocoagulation of limbus on Day 0 on right eye, left eye untreated
- IOP Measurements on Day -1, Day 0 and for 7 consecutive days

Intraocular pressure determinations were made using a TonoPen in awake and minimally restrained rats. IOP for each eye was measured Day -2, Day -1, -30 min, -15 min and immediately prior to surgery and then at +15 min, 1, 2, 3, 4, 5 and 6 hrs and Day 1, 2, 3 and 7 post surgically.

### Findings and Comment

- Intraocular pressure in the operated eyes clearly increased dramatically within 15 minutes of cautery and remained fairly stable, but statistically significantly increased for the 6 hour post surgically and also at Day 1, 2, 3 and 7.
- There were not meaningful differences between the Brown Norway and Sprague Dawley Rats used in this study
- Data is presented in Table 1.



**Table 1: Summary Data of IOP in Sprague Dawley vs. Brown Norway Rats**

Time	SD rats		BN rats	
	OD Operated eye	OS Normal Eye	OD Operated eye	OS Normal Eye
-2D	11.8±4(mm Hg)	10±7	13±1	12±2
-1D	14.±4	13±3	13±5	9±3
-30 min	14±8	11±2	19±6	10±3
-15min	24±8	12±4	18±5	11±1
0 (prior to surg)	22±8	14±3	27±9	9±2
15 min post op	31±3	13±4	19±7	11±4
1h	29±2	13±2	19±3	12±2
2h	24±3	16±3	30±2	10±4
3h	28±4	14±4	27±9	9±6
4h	29±2	15±2	29±7	10±7
5h	31±3	15±3	28±2	11±9
6h	28±5	13±4	23±5	11±1
Day 1	27±2	16±6	17±2	9±9
Day 2	29±2	12±5	19±2	10±1
Day 3	27±4	10±8	17±4	13±9
Day 7	29±3	12±4	19±3	11±9