

# BLF22 Surgical Protocol

## Acute Sciatic Nerve Measurement in Rats

### APPLICATION BASICS

Site: sciatic nerve  
 Species: rat (Sprague Dawley, male)  
 Weights: Study 1 & 2: 240 - 260 grams  
 Study 3: 200 grams  
 Duration: acute

**PROBE TYPE:** N: 18 gauge needle

### Surgical Approach

The rats were anesthetized with nesdonal and ketamine (Studies 1, 2), or pentobarbital (Study 3) at 60 mg/kg im and were placed in dorsal recumbency with legs extended for access to the inner portion of the leg. The skin was retracted and an incision made into the femoral fascia. At this point, the sciatic nerve was visualized lying along side of the saphenous vein. A micromanipulator was used to position a Laser Doppler Probe perpendicular to and 0.1 to 0.2 mm above the nerve. To do so, it was necessary to dim the room lights and visualize the red illumination of the nerve by the Tissue Perfusion Monitor and Probe.

**Study 1:** Homogeneity of the nerve was established by recording three readings at one point on the left side and three readings at different sites on the right side nerve.

**Study 2:** The effect of ischemia was examined. Sciatic nerve perfusion was again measured at a middle site. The nerve was then slightly compressed with a soft plastic Probe held in a micromanipulator. Resulting ischemia was maintained for 60 seconds. After compression release, the hyperemic response reached 183% of baseline.

**Study 3:** The experiment was repeated with smaller rats and different anesthesia with very similar results. Mean hyperemia maximum was 179% of mean baseline and perfusion returned to baseline 120 to 180 seconds after the release of pressure.

### Type N (18 gauge needle) (ABLPHN18)



Diameter : 1.2 mm

### Perfusion Ranges Observed

#### Study 1: n = 10

POSITION LEFT SIDE	MEAN % BASELINE	POSITION RIGHT SIDE	MEAN % BASELINE
(Baseline)	100	1 cm distal	107*
2	104*	center	109*
3	98*	2 cm prox	100*

\*Not significantly different.

#### Study 2: n = 10

TIMING	PERFUSION TPU	% BASELINE
pre-ischemic	25.9 ± 8.2	100
post-ischemic	47.3 ± 13.0	183

### REFERENCES

Desvaux B, Bourdel A, Jardel A, Saumet JL, Trouvé R, "Basic and Post-Ischemic Laser Doppler Flowmetry of the Saphenous nerve in the rat," Experimental Biol, 1996; Abstract 312.

Personal communication with R. Trouvé.