

# BLF22 Surgical Protocol

## Gastric Mucosal Perfusion in Rats

### APPLICATION BASICS

Site:	Gastric corpus mucosa
Species:	Rat, Wistar Body
Weight:	270 - 300 grams
Duration:	Acute
<b>PROBE TYPE:</b>	E: endoscopic N: 11 gauge needle

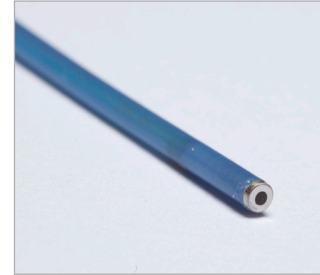
### Application

Includes gastric damage studies from infusion of various agents or from hypotension/reperfusion.

### Surgical Approach

1. Withhold food from the rat for 24 hours prior to the study. Anesthetize with sodium pentobarbital (50/mg/kg, I.P.).
2. Perform a tracheotomy and insert a polyethylene airway tube.
3. Place the rat on a heating pad and maintain  $37 \pm 0.5^\circ\text{C}$  rectal temperature.
4. Place a polyethylene tube in the right carotid artery for continuous infusion of saline  $0.6\text{ml}\cdot\text{hr}^{-1} \times 100\text{g body weight}^{-1}$ .
5. Open the abdomen with a 3 cm long incision.
6. Place a cannula in the lower abdominal cavity and supply additional doses of anesthesia as needed.
7. Dissect connective tissue and displace the viscera in order to access the stomach. Make a small incision (4 mm) in the anterior greater curvature of the forestomach using electric microcautery. Gently lavage the contents with saline at  $37^\circ\text{C}$ .
8. Insert the Laser Doppler Probe through this incision, making gentle contact with the corpus mucosa. Take care that the Probe is not pressing on the mucosa so as to occlude the underlying vessels.
9. Cover the abdominal incision with a film wrap to prevent tissue dehydration.
10. Record gastric mucosal blood flow (GMBF) with the Tissue Perfusion Monitor for a minimum of 30 minutes to confirm a steady resting state. After establishing baseline GMBF, begin further experiments.

### TYPE E (ABLPHE)



Diameter: 1.8 mm  
Head: Teflon coated cable with 1 mm titanium disc at tip of endoscopy segment;  
Length: 2 meters  
Cable: flexible; 2 meters  
Total length: 4 meters

### Type N (ABLPHN11)



Length: 40 mm

### Probe Selection

Although an endoscopic laser Probe was used in this protocol, a more economical 11 gauge needle Probe may be used in the same procedure. The flat surface tip of the Probe should rest against the corpus mucosa and may be held with a balance arm for greater stabilization without pressure.

## Gastric Mucosal Perfusion in Rats cont.

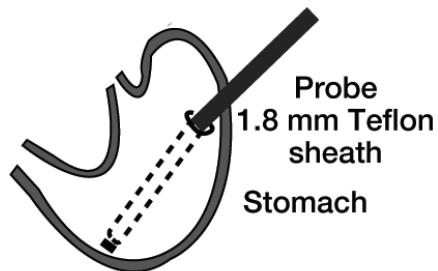


Fig. 1: Probe shown positioned in the rat stomach through a small incision.

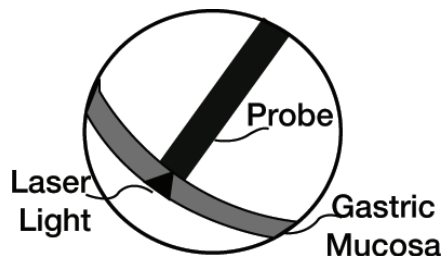


Fig. 2: Magnified cross sectional view of stomach showing the end of the Probe against the gastric mucosa.

### Perfusion Ranges Observed

BASELINE	GMBF = 30 TPU (Tissue Perfusion Units)
After infusion of Platelet Activating Factor (100ng x kg x min <sup>-1</sup> )	GMBF = 40% of baseline GMBF
WITH HYPOTENSION (20 MIN, BP 20-30 MM HG) & REPERFUSION	
During hypotension	GMBF = 35% of baseline GMBF
After reperfusion	GMBF = 145% of baseline GMBF
60 minutes after reperfusion	GMBF = 65% of baseline GMBF

### ACKNOWLEDGEMENT

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### REFERENCES

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Yamaguchi T, "Relationship between Gastric Mucosal Hemodynamic and Gastric Motility," Gastroenterologia Japonica, 1990; 25(3): 299-305.



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