



# **Microvascular Perfusion Measurements following non-invasive drug delivery**

*Using Iontophoresis, minute volumes of drugs can be non-invasively administered in a controlled fashion. The vascular responses are measured by laser Doppler.*



*PF480 Perilont Micropharmacology System combined with laser Doppler, PF 4001-2 Periflux Master and PF 4005-2 PeriTemp Tissue Heater.*



# Perilont Micro Pharmacology System

## Theory

Iontophoresis can be used to transport drugs in ionic form across intact skin. The technology is based on the principle that an electric potential will cause ions in solution to migrate according to their electrical charges. The quantity and distribution of a drug delivered by Iontophoresis are dependent on the charge of the ion, the size of the ion (molecular weight), the strength of the electrical current being applied, the duration of the current flow and numerous other factors. The drugs being administered by Iontophoresis can also cause changes in the blood flow. The vascular response is then measured by laser Doppler perfusion.

## Perilont

*Perilont* has a disposable drug delivery electrode in which the drug solution is absorbed. This minimizes the risk of spillage, drug contamination between tests and cross-infection between subjects. This design is unique and differs from the present technique of Iontophoresis which utilizes a reusable chamber filled with the drug in solution.

The disposable delivery electrode is embedded in a plastic chamber and fixed to the laser Doppler probe head. The probe head is then fixed to the measuring site using double-sided tape. The laser Doppler reads through a window in the centre of the chamber.

To improve reproducibility and interpretation of the laser Doppler readings, the laser Doppler probe head is temperature controlled (e.g. 32°C). The *Perilont* constant current power supply is connected

to the **disposable drug delivery electrode\*** (pad and electrode combined) and to a second electrode, the **dispersive electrode**.

\* patent pending

## Applications

With *Perilont* it is possible to target drugs to specific areas of the microvascular bed. For instance, the C-fibre nerve endings, the vascular endothelium and vascular smooth muscle layers. Typical applications for use are in pharmacology, diabetes research, neurology, occupational diseases, dermatology, etc. For references on Iontophoresis and laser Doppler flowmetry, see Perimed Literature Reference List.

## Commonly used drugs

### Acetylcholine (ACH)

A non-specific vasodilator with effects on C-fibres, vascular endothelium and smooth muscle.

### Pilocarpine

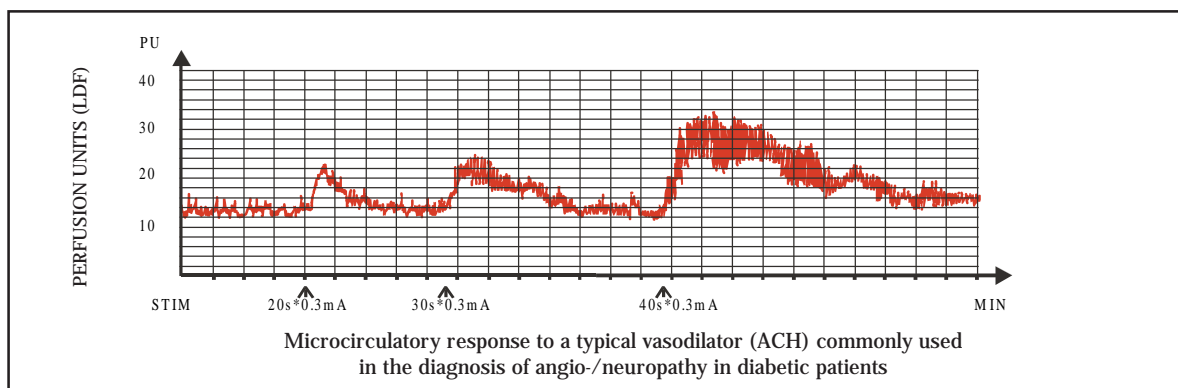
Acts on the endothelium and smooth muscle layers, but has no effect on C-fibres.

### Sodium Nitroprusside (SNP)

Acts on the vascular smooth muscle layer only.

### Bretylium Tosylate

Acts on peripheral sympathetic nerve endings by blocking the release of noradrenaline.



## TECHNICAL DATA

Perilont is an accessory to the PeriFlux System 5000, PeriFlux System 4000, PeriFlux PF 3 and PeriFlux PF 2B. When used with the PeriFlux System 5000 or 4000, a PF 5020 Temp Unit/ PF 4005 PeriTemp Tissue Heater must be included in the system. The PF 3 and PF 2B have integral tissue heater capabilities.

### PF 480-1 Perilont Micropharmacology System for PeriFlux System 5000 or PeriFlux System 4000 including:

- PF 481-1 Single probe including heating element.
- PF 382 Perilont Power supply. Current settings: 0.02 mA - 1 mA. Time interval settings: 1 second to 25 minutes.
- PF 383 Drug delivery electrodes, disposable. 2 packages of 5. Drug volume: 150 microlitres per electrode.
- PF 384 Dispersive electrodes. 2 packages of 5.
- PF 385 Alcohol wipe. Package of 5.

### PF 480-2 Perilont Micropharmacology System: as above, but with PF481-2 dual probe incl. heating element.

### PF 380-1 Perilont Micropharmacology System for PeriFlux PF 3 and PeriFlux PF 2B including:

- PF 381-1 Single probe including heating element.
- PF 382 Perilont Power Supply. Current settings: 0.02 mA - 1 mA. Time interval settings: 1 second to 25 minutes.
- PF 383 Drug delivery electrodes, disposable. 2 packages of 5. Drug volume: 150 microlitres per electrode.
- PF 384 Dispersive electrodes. 2 packages of 5.
- PF 385 Alcohol wipe. Package of 5.

### PF 380-2 Perilont Micropharmacology System: Same as above, but with PF381-2 dual probe incl. heating element.



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