Tissue Viability Imager TiVi8000Micro
for
Microcirculation Mapping

using hand-held probe and tablet computer

generates quantitative information about the microcirculation

Tissue Viability Imaging quantifies what can be observed by the unaided eye and takes subjectivity out of skin testing.
Intended Use

The TiVi8000Micro is designed to map and display real time dynamic alterations in skin or other tissue microcirculation, depicting vasodilation and vasoconstriction effects related to:

- Topical or systemic applications of vaso-active materials
- Skin irritation or skin damage
- Any physiologic process affecting the microcirculatory system
- Bed-side monitoring as well as laboratory testing of microvascular events

TiVi8000 is not registered as a Medical Device. The intended use is research and validation of skin care products under development.

Microvascular Research | Rapid Panelist Screening | Point of Sale Assessment | Demonstration

Basic Operation Principle and Analysis Tools

The Tissue Viability Imager TiVi8000Micro continuously displays a dynamic map of the microcirculation using live video capture. Individual image snapshots are selected and saved to file for detailed analysis and comparison. Unlike other imaging technologies, this methodology is unaffected by movement artefacts making it an ideal tool for investigating microcirculation in moving objects. Local erythema and blanching are easily and accurately quantified through region of interest analysis. After selecting control and test site regions of interest in individual microcirculation images, the TiVi8000Micro software calculates relative changes in erythema intensity and area. Measurement data may be exported to an Excel spread-sheet or compiled as a hard-copy report. All images are exportable to the Tissue Viability Imager TiVi700 system for optional in-depth analysis.

Skin microcirculation is most effectively investigated through non-invasive and noncontact methods in order to avoid adverse effects from injected tracer elements and applied probes. Since the microvascular bed is highly heterogeneous by nature, imaging methods are far superior to those utilizing single point measurements. The patented TiVi technology combines polarization spectroscopy with advanced image processing resulting in highly versatile yet easy to use imaging systems. In studies involving skin care, cosmetics, textiles, drug development, occupational medicine and microvascular or medical research, TiVi8000Micro increases productivity by automatically visualizing and quantifying important parameters such as erythema and blanching. All measurements are collected without the need to touch the tissue under investigation and without being affected by tissue movement artefacts. Mini-tablet computer portability greatly facilitates studies in the laboratory, at the clinic and even at the work-site.

Operating in cross-polarized mode, the green component of light reaching the camera detector is attenuated due to a high absorption rate by the red blood cells. At the same time the red light component is virtually unaltered due to its low rate of absorption by the red blood cells. In contrast, surrounding tissue absorbs both the green and the red light components at approximately the same rate. TiVi8000Micro takes advantage of this wavelength dependence in red blood cells absorption. The software first separates the colour matrixes and then applies an algorithm subtracting the value of each picture element in the green colour matrix from the corresponding value in the red colour matrix. The software then generates and displays an output matrix which represents the local red blood cell concentration.

Selected References


More reference and information about the TiVi-technology on our WEB-site: [www.wheelsbridge.se](http://www.wheelsbridge.se)