LED-Based Lighting for Treating Mucositis

Marshall Space Flight Center
1998 Phase II

Quantum Devices, Inc.
Barneveld, WI

Cancer Patient Receiving LED Treatment

INNOVATION

Light-emitting diodes (LEDs), originally developed for NASA Space Shuttle plant growth experiments, are being used to treat mucositis, severe oral and digestive tract sores resulting from high-dose chemotherapy.

ACCOMPLISHMENTS

Modified design and developed a larger area LED light source suitable for wound healing. In addition to the work being performed at the Medical College of Wisconsin, clinical trials are ongoing at several other facilities: Roswell Park Cancer Institute in Buffalo, N.Y.; Instituto de Oncologia Pediatrica, in Sao Paulo, Brazil; Rush-Presbyterian-St. Luke's Medical Center in Chicago; University of Illinois Medical Center in Chicago; Hospital Sirio Libanes in Sao Paulo, Brazil; and Hadassah University Medical Center in Jerusalem. Treatment improves patients' ability to eat and drink and may also reduce the risk of infections. Efforts reveal that mucositis can sometimes be prevented from developing if initial light therapy session coincides with first chemotherapy treatment. Because the treatment has been so successful, oncologists in trial efforts have reported that they are uncomfortable with denying the light therapy to a control group of chemotherapy / radiation patients.

COMMERCIALIZATION

Results of multi-clinical trials expected to move the product forward as a FDA-approved device. Once approved, the company will be able to market the technology to any facility that aids in healing mucositis. Commercial version of the LED light source now called SpectraLife® Company has submitted a new technology report to MSFC, and has filed for a provisional patent to protect intellectual property.

GOVERNMENT / SCIENCE APPLICATIONS

Technology could be used in the microgravity to keep minor wounds (what would be termed as "minor wounds" on Earth) from becoming mission-catastrophic. Principal investigator approached the Commander of the USS Salt Lake City about installing a tri-wavelength LED source onboard the vessel to improve the wound-healing process for crew members. In Special Operations, LEDs could be used for improved wound healing, as well as speeding deconditioned personnel to full-duty performance. LED usage has been approved by the Naval Special Warfare Command.