



Sensor for detection of wound infection

BACKGROUND

In Europe, there are approx. 20 mio patients with chronic wounds. These wounds are particularly susceptible to bacterial colonization, which can lead to an infection of the wound. Surgical wound infection is estimated to affect between 30-40 surgical patients per 1000 operations, and its effects can be life-threatening, particularly in older patients. The treatment of those wounds incurs additional costs of over 20 billion Euros per year in Europe, nevertheless wound status assessment is still based on the doctor's experience as no quick and reliable tool for wound status assessment is commercially available.

CONCEPT

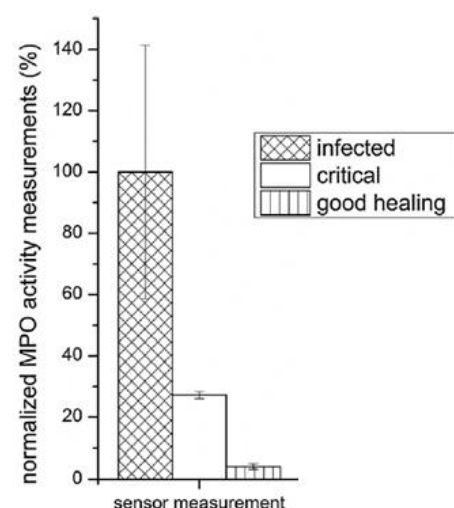
The sensor for detection of wound infection represents a possibility to get objective information about the condition of a wound, e.g. in the course of the change of the wound dressing. The presence of Myeloperoxidase (MPO) is determined as a biomarker for wound infection. This enzyme is increasingly produced by leukocytes of the human immune system at the onset of infection and is released into the wound. A wound fluid sample is collected by a swab and transferred into a small volume of physiological NaCl solution. The MPO enzyme activity is directly detected in the sample solution with the aid of a sensor, which measures the consumption of H_2O_2 caused by the enzyme.

RESULTS

In a pilot study, samples from 15 different wounds were tested. The results of the wound infection sensor were compared with the medical diagnosis of the wounds classified by an experienced physician into the categories "infected", "critical" or "good healing". The study showed that MPO activity correlates with the degree of infection of the wounds and that the sensor results are consistent with the medical diagnosis¹.

OUTLOOK

The sensor technology can be developed into a product for different applications. The system can be used as a Point-of-Care device for rapid wound status assessments in the hospital or as a test strip device for the doctor's office or nurses in the mobile wound care segment.



ADVANTAGES

- fast detection technology for PoC measurements
- biomarker based wound assessment
- result is displayed in 2 min
- screen printing allows low cost sensor production
- small dimensions will allow mobile care applications

MARKET POTENTIAL

The assessment is based on the home care segment of chronic wound management. Due to the lack of infrastructure, mobile wound care has a strong need for quick and reliable wound status assessment. The estimated market potential in Europe was assessed to be approx.6 billion EUR.

PUBLICATIONS

Hajnssek M. et al., Sensors and Actuators B (2015); <https://doi.org/10.1016/j.snb.2014.11.125>

BUSINESS PROPOSAL

We are looking for a licensing partner for the proposed sensor technology.

We will support technology transfer and further development in service for fee projects and/or joint product development in funded projects.

CONTACT

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