

PROGRESS IN PROJECT “WOUNDMONITOR” – DEVELOPMENT OF NON-INVASIVE WOUND STATE MONITORING BY ELECTRONIC NOSE

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Aim: In this paper we describe the progress of work carried out in WOUNDMONITOR project.

Methods: Our study deals with the relationship between the features of the headspace volatile compounds detected by the e-nose and the type of pathogen. We performed serial investigations on the wounds of different origin. Three identical swab specimens were harvested in various types of wounds after the identification of infection. One of the samples was investigated by e-nose, other samples were used as controls and were processed using standard techniques of microbiology.

Results: Stability and reproducibility of volatile responses to the presence of most common wound pathogens were investigated. We found that changes of sensor resistance reiterate when the same micro-organisms were tested in various wounds. It is demonstrated that the artificial features composed of the sensor signals are dependent on the contents of the culture: technology allows identification of most common wound pathogens: *S. Aureus*, *Streptococci*, *Pseudomonas aeruginosa*, *Proteus*, *Acinetobacteriae*, *Eschericiae*, *Enterococci* and *Enterobacteriae*. It is also recognised that the e-nose outputs are dependent on the amount of micro-organisms and are promising in the quantitative analysis of bacterial colonisation.

Conclusions / Discussion: Changes of semiconductive sensor based e-nose resistance reiterate when the same micro-organisms are found in the wound burden. Diagrammatical representation of these might be used for comparative analysis of contamination.