Bacteria classification using electronic nose for diabetic wound monitoring

Abstract

Array based gas sensor technology namely Electronic Nose (E-nose) now offers the potential of a rapid and robust analytical approach to odor measurement for medical use. Wounds become infected when a microorganism which is bacteria from the environment or patient's body enters the open wound and multiply. The conventional method consumes more time to detect the bacteria growth. However, by using this E-Nose, the bacteria can be detected and classified according to their volatile organic compound (VOC) in shorter time. Readings were taken from headspace of samples by manually introducing the portable e-nose system into a special container that containing a volume of bacteria in suspension. The data will be processed by using statistical analysis which is Principle Component Analysis (PCA) and Linear Discriminant Analysis (LDA) methods. The most common bacteria in diabetic foot are Staphylococcus aureus, Escherchia coli, Pseudomonas aeruginosa, and many more.

Keywords