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Cancer detection using an electronic nose: A preliminary study on detection and discrimination of cancerous cells (Conference Paper)

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Abstract

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Lack of effective tools to diagnose lung cancer at an early stage has caused high mortality in cancer patients especially in lung cancer patients. Electronic nose (E-Nose) technology is believed to offer non-invasive, rapid and reliable analytic approach by measuring the odour released from cancer to assist medical diagnosis. In this work, using a commercial E-nose (Cyranose-320), we aimed to detect the volatile organic compounds (VOCs) emitted by different types of cancerous cells. The lung cancer cell (A549) and breast cancer cell (MCF-7) were used for this study. Both cells were cultured using Dulbecco's Modified Eagle's Medium (DMEM) with 10% of Fetal Bovine Serum (FBS) and incubated for three days. The static headspace of cell cultures and blank medium were directly sniffed by Cyranose-320. The preliminary results from this study showed that, the E-nose is able to detect and distinguish the presence of VOCs in cancerous cells with accuracy of 100% using LDA. To this end, the VOCs emitted from cancerous cells can potentially used as biomarker. © 2014 IEEE.

Author keywords

Cyranose320   Electronic nose   LDA   Lung cancer cell   Volatile organic compounds (VOCs)

Indexed keywords

| Engineering controlled terms: | Biological organs   Biomedical engineering   Cell culture   Cells   Cytology   Diagnosis Diseases   Organic compounds   Volatile organic compounds |

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