

## Detection of gastric cancer using nanomaterial-based breath test

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**Background:** Volatile organic compounds (VOC) could provide a novel, non-invasive and quick approach to gastric cancer.

**Methods:** Altogether 1002 breath samples were collected. Samples were analysed using (a) gas chromatography linked with mass spectrometry (GC-MS) and (b) cross-reactive nanoarrays based method in combination with pattern recognition methods.

**Results:** 7 VOCs were found in significantly higher concentrations in the cancer group when compared to the controls. Nanoarray analysis showed accuracy 85%, sensitivity 84% and specificity 86% distinguishing GC and non-cancer condition.

**Conclusions:** VOC-based breath prints detected by nanomaterial-based sensors could be used for identification of GC and distinction from benign stomach ulcers and less severe stomach conditions. Being a non-invasive, low-cost and fast-prediction approach breath sample analysis is expected to become a method for screening, surveillance and monitoring for different malignant and non-malignant diseases. However, large multi-centric population-based validation studies in different geographical areas are required.