Detection of Early Stage Lung Cancer by Electronic Nose

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Background

The diagnosis of early stage lung cancer is essential and substantially determines the 5-year life expectancy. Survival rates for lung cancer are generally lower than those for most cancers, with an overall 5-year survival rate for lung cancer of about 16% compared to 65% for colon cancer, 89% for breast cancer, and over 99% for prostate cancer. 58 - 73% of patients with stage I lung cancer survive for 5 years. 5-year survival of patients with stage III lung cancer is only 9 - 24%.

Objective

The aim of our study was to prove the potential of exhaled breath analysis to discriminate early stage lung cancer.

Methods

Study population

Exhaled breath of morphologically verified stage 1-4 lung cancer patients, classified according to the lung cancer staging of American Joint Committee on Cancer 2009 (cancer group) and mixed group of patients with COPD, asthma, bronchiectasis, and healthy volunteers (no cancer group) was examined.

Conclusions

Exhaled breath analysis by electronic nose using support vector pattern recognition method is able to discriminate early stage lung cancer in healthy subjects and patients with different lung diseases.

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