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Initial results of electronic nose for colorectal cancer specific breath detection

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- **Background:** The screening modalities for colorectal cancer (CRC) do exist and are recommended for routine clinical applications in most of the developed countries. Analysis of exhaled air using sensors is a novel and unique approach for cancer detection that could solve the limitations of CRC screening tests.

- **Aim:** to evaluate the applicability of electronic nose to discriminate between breaths of CRC patients' and controls breaths

- **Methods:**
- 14 patients: 6 CRC patients, 8 healthy individuals
- breath was measured with a modular multi-sensor VOC analyser
- the device included: 48 gold nanoparticle sensors (GNP), 11 analogue metal oxide sensors (MOX), 12 digital MOX sensors and infrared detection unit
- Mann-Whitney U test used *(p <0,05)*

Research Results

- 12 GNP sensors and two MOX sensors shown statistically significant *(p >0,05)* results
- The following GNP and MOX sensors features could discriminate between colorectal cancer group and healthy individuals:

Sensor chemistry		*P-value range*
GNP	87v4	0,005…0,013
	55v4	0,003...0,043
	45v4	0,005…0,029
A1_MOXD		0,043
B1_MOXD		0,020

Conclusions

- The results demonstrate that the proposed approach is feasible for detection of CRC

- GNP and MOX sensors have potential to detect VOC profiles in CRC cancer patients

- The study should be continued to build and evaluate more specific detection models

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