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BIOGEN ANALYST – A NEW METHOD FOR EARLY STAGE DISEASE SCREENING

Special examinations exist for many chronic diseases, which can diagnose the disease while it is asymptomatic, with no signs or symptoms. The earlier detection of disease may lead to more cured patients or longer survival. This possibility has led to public health programs which recommend populations to have periodic screening examinations for detecting specific chronic diseases like cancer, diabetes and cardiovascular diseases. From the beginning of our research the main idea was development of non-invasive diagnostic methods. The idea is based on parallel use of biochemical and genetic tests. Existing methods to detect cancer in asymptomatic patients have limitations, and there is a need to develop more accurate and convenient methods. In this study, we investigated the possibility of early detection of cancer by two step procedure. The first step is an adaptive Mahalanobis distance-based statistical cluster analysis performed on a set of biomedical parameters, like glycoproteins and globulins, while the second one is a pre-trained gene-expression-patterns analysis in peripheral blood cells based on new methods including support vector machine classification, developed by Professor Vapnik and multi-layer neuron networks analysis developed by Dr. Kupka. The most frequent types of cancer diseases were evaluated including prostate, breast, ovarian, gastric, hepatocellular, thyroid, glioma and colorectal. Data from several thousand persons were analyzed. Thanks to the combination of two independent diagnostic methods, the success rate higher than 90% was achieved in all cases.

Biography

Jaroslav Jansa has received his master's degree in Control Engineering from the Institute of Chemical Technology (VSCHT) Prague in 1967 and his doctor's degree in Physical Chemistry from the Institute of Macromolecular Chemistry of the Czechoslovak Academy of Sciences in 1978. He has been working for more than 40 years in the field of wireless communications, eHealth and security. Jansa is author of 30 Czech, EU and US patents. He published more than 100 scientific and technical papers in Europe and USA.

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