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## ***Streszczenie (język angielski)***

The aim of the research presented in the doctoral dissertation below was to construct a new analytical panel as an instrument for the determination of selected biomarkers in human body fluids, mainly serum / blood plasma, using the Imaging Surface Plasmon Resonance (SPRI) technique as a detection method. The construction and analytical development of biosensors for individual biomarkers made it possible to use them in one panel (with calibration) for the simultaneous determination of five markers in samples from individual patients.

The method of detecting the analytical signal from the constructed biosensors used in the research is Surface Plasmon Resonance Imaging (SPRI). Four biosensors were constructed and analytically developed based on the interactions of specific proteins (CA-125, HE4, IL-6 and CEA) with the relevant antibodies as receptors. For interleukin 6, a biosensor was also developed using the inhibitor's interactions with the studied protein. In order to broaden the diagnostics of the tested samples, the composition of the analytical test also included aromatase, the biosensor of which had already been constructed. The construction and analytical development of a biosensor on the SPRI apparatus and its prototype were carried out in parallel for the CA-125 marker.

The investigated markers were determined in biological samples (ovarian cancer, endometrial cyst, colorectal cancer) using single biosensors and a newly created gynecological and oncological panel, comparing the obtained results with the control sample (healthy donors). Moreover, the investigated tumor markers were determined in standard diagnostic laboratories.

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