



## DETERMINATION OF HER-2/NEU ONCOPROTEIN LEVEL IN THE SERUM OF BREAST CANCER PATIENTS

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**Introduction:** Human epidermal growth factor receptor 2 (Her2) is the tyrosine kinase growth receptor encoded by Her2 proto-oncogene. Her-2/neu markers are considered an unfavorable prognosis factor, and its high expression is indicative of high metastatic tumor capacity. Expressed Her2 protein undergoes dimerization, resulting in degradation of intracellular and extracellular domain of receptor and extracellular domain releases into intercellular environment. Thus, the extracellular domain of the Her-2/neu receptor circulating in the bloodstream can be detected and measured in the serum. This feature formed the basis for the development of immunoassay systems for detection of soluble Her-2/neu in serum. The screening study of population can be carried out using enzyme linked immunosorbent assay, which is based on the expression and offers high sensitivity and high specificity of detection.

**Methods:** The "sandwich" version of ELISA was performed on the basis of monoclonal antibodies specific for the recombinant protein of extracellular domain of the Her-2/neu receptor.

**Results:** Serum samples from 12 patients with benign changes in mammary glands (the first group) and 49 breast cancer patients with 1-3 stages of the disease (the second group) were used in this study. In the first group, the average level of Her2/neu in serum was 8.5 ng/ml (ranging 5-12.5 ng/ml), while in the second group this indicator was 55 ng/ml (ranging 17.5-92.5 ng/ml). The broad range of oncological marker variation in the second group is attributable to cancer stages (1 through 3). Thus, the average concentration of the oncoprotein in patients at cancer stages 2 and 3 was - 72.5 ng/ml compared to patients with 1 stage where the mean was - 29.5 ng/ml.

**Conclusion:** Identification of circulating extracellular domain of Her2/neu oncoprotein in serum is a non-invasive tool for early prognosis of breast cancer. Developed ELISA on the basis of monoclonal antibodies could help choose an appropriate treatment strategy and manage patients health condition after treatment.