The dependence of changes of some prostate enzyme's isoformes on gland pathogenesis

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The diagnostics and treatment of prostate cancer, is acute problem and need for an easy hospital use Biomarker detection. The investigation among prostate cancer new biomarkers had demonstrated the importance of the intracellular metabolism of some areas, including phosphorylation - dephosphorylation process, antioxidant system. From this point of view the importance of a number of enzymes, which the molecular forms changes of them are relations with gland pathogenesis. Therefore, the goal of our experiments were the study of enzymes acid phosphatase, peroxidase and catalase isoenzymes spectrum by enzyme – zymograme analyses method. The isoforms of enzymes was studied in subcellular fractions (cytoplasm, mitochondria, microsoma) isolated from prostate post - operative tissue with various diagnoses (benign prostatic hyperplasia, intraepithelial neoplasia, atypical adenomatose hyperplasia and adenocarcinoma). The relative front (Rf) values were used for isoenzymes analyses and differences in mobility of enzyme bands were used for zymogram analyses. The obtained results were compared with fraction of benign hyperplasia tissue. The electrophoretic bands of isoenzymes were analysed by the computer program (Lab Work Program) by quantitative changes of optical density (Areal Tool, Optical Density). An optical density measurement was recalculation per 1 microgram protein of sample.

Obtained results revealed the differences in mobility of enzymes bands in dependence of subcellular fraction as well as the pathologies form. In parallel the quantitative changes of enzyme bands were revealed in dependence of pathologie. The changes were especially concern to enzymes of antioaxidant system. In partrticular, the highest optical density of catalase was revealed in cytoplasm fraction with atypical form. Enzyme quantity was decreased in microsomal and mitochondria fractions according to complication of the disease to compare with benign hyperplasia diagnosis. Moreover, in microsomal fraction with low grade neoplasia and atypical adenomatous hyperplasia appeared the new isoenzymes of catalase with mobility value Rf=0.548 and Rf=0.666. This experimental findings are in accordance with previously data, the enzyme activity decreased in intraepithelial neoplasia and atypical adenomatous hyperplasia microsome fractions.

The received results statement, that the changes in some enzymes isoforms of prostate subcellular fractions with different pathology revealed according with diagnosis complication. Experimental results indicate the enzyme-zymograme method using in prostate pathogenesis diagnostic. The revealing of isoenzyme form in blood plasma can prognosis the prostate pathology form.