Posters

LA1

SPRI biosensor for determination of cathepsin L

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Introduction: Cathepsin L (CTSL) is one of the most active cysteine proteases. It degrades: collagen, elastin, the alpha-1 protease inhibitor; is involved in many physiological processes and in the development of diseases and metastasis.
Methods: To develop a new Surface Plasmon Resonance Imaging biosensor sensitive to CTSL, CTSL inhibitor and 1-octadecantiol were used. Preliminary measurements of the CTSL concentration were carried out in the blood plasma of the healthy persons and in blood plasma of patients collected before and after surgical resection: ovarian tumor, ovarian cyst or gall bladder removal.
Results: The new biosensor was validated by determination of analytical parameters, such as: the concentration of CTSL inhibitor necessary to saturation of the biosensor surface, linearity response of biosensor, selectivity, precision and detection limits of the method. Also, to validate the new biosensor, the measurements of the enzyme concentration in the biological samples by enzyme-linked immunosorbent assay were conducted. It was found that the correlation between these two methods was good.
Discussion: It can be concluded that the newly developed SPRI biosensor sensitive to CTSL is characterized by good analytical parameters and can be regarded as a new analytical method to determination concentration of this enzyme in biological samples competitive to ELISA.

LA2

MT1-MMP evaluation in neointimal hyperplasia in the late follow-up after prosthesis implantation

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Objective: Vascular surgical interventions are often burdened with late complications generally caused by neointimal hyperplasia. It seems that neointima development is the result of imbalance between synthesis and degradation of ECM components, mainly collagen. The objective of this study was to assess potential contribution of MT1-MMP in late stages of neointima development. Since, MT1-MMP could regulate matrix remodeling *via* pro-MMP-2 activation, we additionally evaluated MMP-2 and TIMP-2.
Materials and Methods: The studied material consisted of neointima samples taken at least 6 months after the initial surgery of bypass grafting. The control material consisted of segments of femoral arteries collected from organ donors. Western-blot, ELISA and zymography techniques were used for the determination of MT1-MMP, TIMP-2 and MMP-2. The activity of MT1-MMP was measured by fluorometric assay.
Results: We demonstrated significantly increased MT1-MMP protein content but significantly lower activity of MT1-MMP in neointima when compared to normal arteries. The decreased MT1-MMP activity was concomitant with reduced activity of MMP-2. The TIMP-2 protein levels in neointima and normal arteries were not significantly different.
Conclusions: The present study showed that later stages of human neointima development are characterized by a simultaneous decrease in the catalytic activity of MT1-MMP and MMP-2 when compared to the normal artery wall. This may suggest the hypothesis that excessive deposition of ECM may result from reduced activity of proteolytic enzymes.