International Conference 'Advances in Pneumology'
Bonn, 17-18 June 2011

ANTI-PROTEOLYTIC ACTIVITY IS CRUCIAL FOR THE ANTI-TUMOR EFFECTS OF PAI-1 TOWARDS LUNG AND PROSTATE CANCER CELLS

A. Rozy[1], J. Chorostowska-Wynimko[1], M.Kędzior[1], P. Jagus[1], A. Szpechciński1, E. Skrzypczak-Jankun[3] and J. Jankun[3]

[1]Laboratory of Molecular Diagnostics and Immunology, National Institute of Tuberculosis and Lung Diseases, Warsaw, Poland;
[2]Urology Research Center, Health Science Campus, University of Toledo, Toledo, OH, United States of America

Plasminogen activator inhibitor type 1 (PAI-1) plays an important role in tumor growth and metastasis formation, directly via specific urokinase complexing or indirectly due to its affinity to vitronectin. The aim of this study was to analyze the impact of the mutant forms of PAI-1: very long half-life (VLHL PAI-1) or devoid of affinity towards vitronectin (Vn neg PAI-1) and wild form (wPAI -1) on proliferation of lung cancer (A549 and H1299) and prostate cancer (LNCaP and DU145) cells characterized by different proteinase (urokinase) production.

The dose- and time-dependent inhibition of cell proliferation in the presence of VLHL PAI-1 was evident in A549 and LNCaP cultures. In H1299 cells inhibitory effect was only dose-depended ($p<0.001$), while in DU145 only 100 mg/ml of VLHL PAI-1 in 72 hrs cultures suppresed prostate cancer cells proliferative activity ($p <0.001$). No significant effect of Vn neg PAI-1 on the proliferation of A549 and H1299 was observed while in prostate cancer lines (DU145, LNCaP) only the inhibitory effect of the highest Vn neg PAI-1 concentration (100?g/ml) was evident ($p <0.001$) but not time-dependent. wPAI-1 did't affect A549 and LNCaP proliferation while in highest concentration it had the stimulating effect on H1299 and Du145 (24,48 hrs cultures).

PAI-1 is a negative regulator of cancer cells proliferation due to its anti-proteinase activity. Its biological effect on lung cancer cells is time and dosage-dependent.