INHIBITION OF GROWTH FACTOR SIGNALING PATHWAYS BY IMATINIB MESYLATE IN MOUSE NORMAL LEYDIG CELLS

Seyyed Mohammad Reza Hashemnia¹, Fatemeh Kheradmand²*, Farzaneh Noori³, Shiva Roshan-Milani⁴

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Abstract

**Background & Aims:** Cancer cells proliferation may be mediated by abnormal phosphorylation of signaling pathways downstream of tyrosine kinase receptors such as Platelet derived growth factor receptor α (PDGFR-α) and β (PDGFR-β). We aimed to study the phosphorylation level of PDGFR-α and PDGFR-β and apoptosis in mouse normal leydig cells being exposed to Imatinib.

**Materials & Methods:** The mouse TM3 leydig cells were treated with 0, 2.5, 5, 10 and 20 μM Imatinib for 2, 4, and 6 days. The apoptosis and phosphorylation level of PDGFRs were assessed by caspase-3 activities colorimetric and fluorescence immunoassay methods, respectively. For statistical analysis, one-way ANOVA and T-test were performed.

**Results:** Phosphorylation level of PDGFR-α in the treated (0.21±0.001) and control cells (0.35±0.13) was significantly different (P<0.05), and its level decreased with increasing drug dosage (P<0.05). PDGFR-β level and apoptosis had no significant differences between groups, although PDGFR-β level decreased significantly with increasing exposure duration (P<0.05).

**Conclusion:** By inhibition of signaling pathways downstream of growth factors specifically PDGFR-α phosphorylation blockage in normal leydig cells, Imatinib may interfere with cellular growth. It seems that this drug has no effect on apoptotic pathways.

**Keywords:** Apoptosis, Imatinib mesylate, Leydig cells, Platelet derived growth factor receptor

**Address:** Biochemistry Department, Faculty of Medicine, Urmia University of Medical Sciences, Urmia Iran  Tel: (+98) 9143416660  E-mail: f_kheradmand@umsu.ac.ir

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¹ MSc Student in Clinical Biochemistry, Faculty of Medicine, Urmia University of Medical Sciences, Urmia, Iran
² Assistant Professor of Clinical Biochemistry, Cellular and Molecular Research Center, Urmia University of Medical Sciences, Urmia, Iran (Corresponding Author)
³ Assistant professor of Nutritional Physiology Aquaculture, Artemia and Aquatic Animals Research Institute, Urmia University, Urmia, Iran
⁴ Assistant Professor of Physiology, Faculty of Medicine, Urmia University of Medical Sciences, Urmia, Iran