Poster 7

Solution structure of *src* homology 2(SH2) domain of the novel protein tyrosine kinase 6 (PTK6)

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Non-receptor protein tyrosin kinases (PTKs) play an essential role in important intracellular functions such as cell proliferation and differentiation by signal transduction from cell surface receptors to their intracellular targets. Protein tyrosin kinase 6 (PTK6), a member of the non-receptor protein kinase, consists of a *src* homology 2 (SH2), a *src* homology 3 (SH3) and catalytic tyrosin kinase domains.

Chemical shift assignments were obtained for SH2 domain of human PTK6 by heteronuclear multidimensional NMR spectroscopy, employing uniformly ^{13}C-/^{15}N-enriched protein. For backbone and side chain assignments, double and triple resonance multidimensional NMR techniques, which are ^{15}N-TOCSY-HSQC, ^{15}N-NOESY-HSQC, HNCA, HN(CO)CA, HNCACB, CBCA(CO)NH, HCCH-TOCSY experiments, were employed. ^{15}N-NOESY -HSQC, ^{13}C-edited NOESY and HNHA experiments were used to obtain Nuclear Overhauser Enhancement (NOE) and dihedral angle restraints for determination of three-dimensional structures. Solution structure indicated that SH2 domain of the PTK6 shares a common structural motif with other SH2 domains. The structure clearly indicates that SH2 domain of human PTK6 resembles the consensus polypeptide fold exhibited by other SH2 domains. However, our NMR structure consists of five b-strands and two a-helices. Based on structural data together with relaxation parameters and ^{15}N-^{1}H NOE .data, the potent ligand binding sites have been suggested. In addition, the structural role of SH2 domain of the PTK6 related with its biological function in intracellular signaling pathway will also be discussed in this presentation.