

Approaches to lead generation - A novel molecular target in cancer drug discovery development

P. Sarita Rajender, RajenderVadija, Thirupathi Mukkera and Uma Vuruputuri

Department of Chemistry, Nizam College, Osmania University, India

Cell regulation is an essential mechanism in cell proliferation and has close relationship with carcinogenesis. The main focus in cancer research is on the formation, activation, inactivation, of Cyclin – CDK (Cyclin Dependent Kinase) complex which forms the basis of cell regulation (1). Cyclin X_1 is a new member of cyclin family which is located in nucleus, whose expression is induced by DNA damage and is transcriptionally activated by P^{53} tumour suppressor gene (2). Cyclin X_1 exerts a negative feedback regulation of P^{53} by regulating dephosphorylation of Mdm2, an Oncoprotein, by complexing with PP2A during nucleolar stress. (3,4). The main objective is to inhibit the binding of PP2A- Mdm2 complex (5) and with cyclin X_1 which stabilizes P^{53} leading to cell cycle arrest and apoptosis.

In the present work, the 3D model of cyclin X_1 is generated using homology modeling techniques and validation protocols. Active site prediction is carried out using various server tools and Schrodinger Suite, which allow envisaging the important pockets for putative receptor binding. (6,7,8). Further studies are aimed at designing new chemical entities which may be used as potent anti cancer therapeutic leads.

Keywords: Cyclin Dependent Kinase Complex, P^{53} , Transcription and New Chemical Entities

Biography

P. Sarita Rajender, DST – Scientist at The Department of Chemistry, Nizam College, Osmania University since 2009 and has completed Ph.D in Synthetic Organic Chemistry in the year 1996. She is a post-doctoral research fellow working on novel platforms for finding new leads in Cancer therapy. Patenting process is under progress for promising new lead molecules. Her field of research interest includes modeling of novel protein targets & identification of new chemical entities (NCE's) using Computational Chemistry, Chemical-Biology and Software tools. She has mentored PG students in their dissertation work during teaching tenure. She has actively involved in organizing seminars/ workshop for students. Dr. P. Sarita Rajender published several research articles in reputed international journals and has presented papers at various International and National Conferences.

saritarajender@gmail.com