INTRODUCTION

Cancer is a class of diseases characterized by uncontrolled cell growth. There are over 100 different types of cancer, and each is classified by the type of cell that is initially affected. Protein kinases are clinically relevant and attractive drug targets for most of cancerous diseases. They modify other proteins by chemically adding phosphate groups to them (phosphorylation). Phosphorylation usually results in a functional change of the target protein by changing enzymatic activity, cellular location and association with other proteins. The human genome contains about 500 protein kinases that constitute about 2% of all human genes. Kinases are known to regulate the majority of cellular pathways, especially those involved in signal transduction.

RIBOSOMAL PROTEIN S6 KINASE:

The ribosomal protein S6 kinase (P70S6 kinase) is a mitogen activated Ser/Thr protein kinase, essential for cell growth, G1 cell cycle progression and cell survival. Human P70S6 kinase is involved in different signaling pathways and phosphorylates the downstream S6 protein of the 40S ribosomal subunit there by controlling the translational activity. Over expression of human P70S6 or rapid amplification of gene (RP56K8)1 leads to rapid cell proliferation causing cancer in various organs of humans like colon, breast, ovary, etc.

The over expression of P70S6K protein is principally due to activation of some phosphorylating sites or ATP binding sites in the domain regions (fig 1). We identified new leads that can show inhibitory activity against cancer causing human P70S6 kinase through ligand based virtual screening.

METHOD:

CONCLUSION

Comparative analysis reveals that one of the published inhibitor (stauroporine) ranked 5 in the top ten leads with dock score (-11.46) is higher than 4 lead molecules. Hence the top ranked 4 leads are considered as novel lead molecules. Lead 1 with lowest XP Gscore, more number of hydrogen bonds and good Van der Waals contacts would be highly useful for designing potential inhibitor for cancer therapy.

ACKNOWLEDGMENTS

My deep sense of gratitude to the honorable Dr. A. Umamaheswari, Coordinator of BIF & Head of the Department, Bioinformatics, SVIMS, Tirupati for making me a part of her unit and providing all necessary amenities. I am highly thankful to DBT, ministry of science and technology, Govt. of India for providing all the necessary facilities to carryout project.