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**Name of the Scholar:** Saleha Anwar

**Name of the Supervisor:** Dr. Md. Imtaiyaz Hassan

**Name of the Centre:** Centre for Interdisciplinary Research in Basic Sciences

**Topic of Research: Pharmacological inhibition of potential kinase for therapeutic management of cancer and associated diseases**

### **Findings**

Cancer refers to diseases characterized by the development of abnormal cells that divide uncontrollably and possess the ability to destroy normal body tissue. Cancer can spread throughout your body and is the second leading cause of death worldwide. Kinases have a well-known role in cancer development and progression, neurodegeneration, diabetes and cardiovascular diseases etc. and hence are targeted for inhibition. MARK4 and PDK3 kinases were targeted for their role in cancer and neurodegeneration. The kinases were expressed and were screened with different libraries of natural compounds to obtain the best fit ligand. *In-silico* and *in-vitro* experiments were performed to estimate the binding of the protein and ligand. Various cell line based experiments were also carried out to assess the efficacy of the compounds against cancer and neurodegeneration. The analysis aided to find the best ligands against the kinase that helped to quench the overexpression of these kinases and reduction in cancer viability by inducing apoptosis. The ligands were also efficient to hinder tau phosphorylation by inhibiting these enzyme kinases in cell based experiments. The study established the role of MARK4 and PDK3 in cancer and neurodegeneration and the best fit ligands against them.