HOD: Dr. Prosenjit Saha, Ph.D

Brief description of the ongoing research work:

A. **Extramural Projects**

Project 1: Natural resources to increase the safety and efficacy of conventional chemotherapy by Doxorubicin. ***Funding agency*****:** SERB-DST.

Key findings: Co-administration of Indole-3-Carbinol (I3C) and doxorubicin (DOX) could downregulated MDM2 expression and thereby upregulation of p53 expression in tumor cells. We found significantly higher expression of Apaf-1, caspase-9, cleaved caspase-3 and cleaved PARP in I3C and DOX dual-combination therapy in comparison to DOX-mono-therapy. Thus, it can be concluded that

I3C sensitized the tumor cells towards DOX-therapy in tumor cells which could be used in future cancer treatment.

Project-2: Use of a novel coumarin based organoselenium compound as adjuvant with standard chemotherapeutic drug for more effective cancer treatment.

***Funding agency*:** UGC.

Key findings: Synthetic Organoselenium compound MUS, could be applied in combination with Carboplatin to induce the therapeutic efficacy of drug. MUS helped in cancer cell killing while giving protection towards normal cells. The molecular mechanism of carboplatin and MUS interaction is underway.

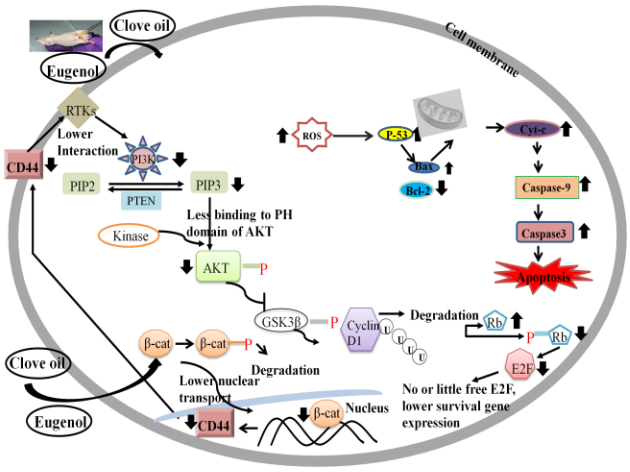
B. Intra-mural Project :

Project-3: Chemotherapeutic potential of Novel Nucleoside Analogs in Experimental Carcinoma. *Funding agency*: CNCI

Key findings: We identified two novel nucleoside analogs which have chemotherapeutic efficacy against EAC induced ascites carcinoma. Most importantly these compounds are nontoxic to normal cells.

Project-4: Therapeutic efficacy of eugenol thorough induction of apoptosis in Ehrlich Ascites Carcinoma (EAC) cell line. *Funding agency*: CNCI

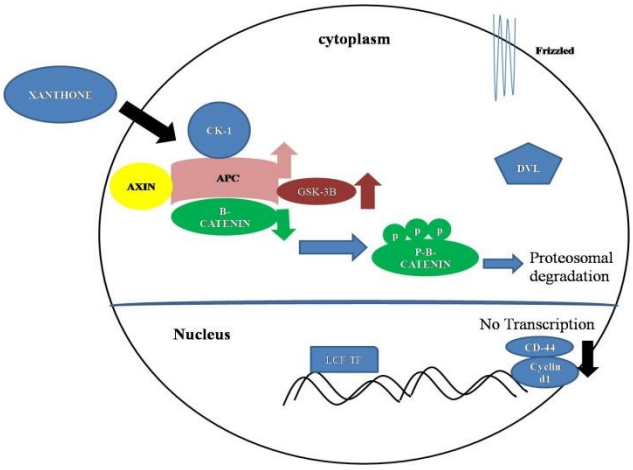
Key findings: Clove is a very well-known spice. Oil extract of clove is common for anaesthetic and local analgesic activity from ancient times. The most abundant and active component of clove oil is eugenol. In this study we have focused on its anticancer nature through alteration of cellular signaling pathway in EAC cell line *in vivo*.



Project -5: Antitumor Efficacy of xanthones isolated from *Swertia chirata.*

***Funding agency*: CNCI**

Key findings: The plant *Swertia chirata*, commonly known as Chirata or Kirata-tikta in Sanskrit is well known for its multifarious medical value since the era of Atharva Veda (Charaka Samhita) and is widely used in Indian medicine as a crude drug. The anti-carcinogenic potential of crude extract of *Swertia chirata* was first time reported from our laboratory (Saha et al 2004). In this project we are planning to identify the most potent xanthone presence in *S chirata* and to evaluate the antitumor efficacy of that compound if any.



Recent publication page

2017 Tobacco‐induced Carcinogenesis and Chemoprevention by Some Natural Products. Debolina Pal, Subhayan Sur, **Prosenjit Saha**, Chinmay Kumar Panda. ***Journal of Radiation and Cancer Research,*** 8:35-43, 2017

2016 Tea polyphenols EGCG and TF restrict tongue and liver carcinogenesis simultaneously induced by N-nitrosodiethylamine in mice. Sur S, Pal D, Roy R, Barua A, Roy A, **Saha P**, Panda CK. ***Toxicol Appl Pharmacol***. 2016 Jun 1;300:34-46. doi: 10.1016/j.taap.2016.03.016. Epub 2016 Apr 4.

2015 Molecular mechanism of regulation of villus cell Na-K-ATPase in the chronically inflamed mammalian small intestine. **Saha P**, Manoharan P, Arthur S, Sundaram S, Kekuda R, Sundaram U. Biochim Biophys Acta. 2015 Feb;1848(2):702-11. PMID: 25462166.

2012 Regulation of sodium-glutamine cotransport in villus and crypt cells by glucocorticoids during chronic enteritis. Arthur S, **Saha P**, Sundaram S, Kekuda R, Sundaram U. ***Inflamm Bowel Dis***. 2012 Apr. PMID:22508450

2012 Na-glutamine co-transporters B(0)AT1 in villus and Sn2 in crypts are differentially altered in chronically inflamed rabbit intestine. **Saha P**, Arthur S, Kekuda R, Sundaram U. ***Biochim Biophys Acta***. 2012; 1818(3):434-42PMID:22100603