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Matricellular CCNI/Cyr61 as a regulator of pancreatic carcinogenesis in the sonic hedgehog signaling pathway and the use of resveratrol for cancer pathway

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Cyr61 is a 42 kDa secreted protein from CCN-family, containing four different conserved molecular domains. Overproduction of Cyr61/CCN1 plays a critical role in the development and progression of pancreatic cancer, through the induction of EMT and stemness. Pancreatic cancer stem ce-lls (PCSC) are rare tumour cells characterized by their ability to self-renew, and are responsible for tumour recurrence accompanied by resistance to current therapies. Shh pathway is highly activated in pancreatic CSCs and plays important role in maintaining stemness by regulating the expression of stemness genes. Cyr61 expression has been found to be exorbitantly higher in cancer stem/tumour initiating Panc-1-side-population (SP) cells. Cyr61/CCN1 silencing in pancreatic CSCs results in reduced aggressive behaviour, reversing of the EMT, blocking of the expression of stem-cell-like traits and inhibition in migration. In contrast, addition of Cyr61 protein in culture medium augments EMT and stemness features in relatively less aggressive BxPC3 pancreatic cancer cells. The objective of this study is to investigate the role of CCN1 & Shh pathway in pancreatic cancer and to examine the molecular mechanisms by which CCN1 acts as a regulator for Shh pathway. Another objective of this study is to examine the molecular mechanisms by which resveratrol inhibits stem cell characteristics of pancreatic CSCs derived from human primary tumours and KrasG12D transgenic mice. Hence, this study aims to identify the role of CCN1 in pancreatic cancer and the possibility of resveratrol to be used as a therapeutic agent.

Development of novel fluorescent pigment labeled silver nanoparticles for effective delivery in reproductive cancer cells

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Nanoparticles (NPs) are of a great interest in a variety of scientific fields such as cell biology, biotechnology, diagnostics, analytics, and pharmaceutics and pharmacological applications. In medicines, for example, functionalized NPs find applications in sensing and diagnostics on a single-cell level. Recent progress in polymer science allows preparation of shape-persistent pigmented fluorescent protein polymer NPs. The development of methods for producing fluorescent NPs can open new fields for their application with wider rage. Over the past few decades, there has been considerable interest in developing biodegradable NPs as effective drug delivery systems. However, the main drawback of these carriers is their non-specific interaction with cells and proteins leading to drug accumulation in non-target tissues. This is the reason why research has focused on the development of a novel biologically manipulated bio-pigmented fluorescent NPs. In this abstract, the study summarizes the simple, green method was developed for the synthesis of silver NPs by using plant polysaccharides as reducing/stabilizing agents. The obtained ionic charged silver NPs were subjected to conjugation with the algal photosynthetic pigment of R-Phycoerythrin(R-PE) and further characterized with UV-vis spectroscopy, FTIR, NMR, thermo-stability properties and transmission electron microscopy. Further the pigmented NPs showed extended antitumor activity *in vitro* against human reproductive cancer cells. Finally, the developed fluorescent silver NPs are likely to have a great potential to be used as an effective and non-cytotoxic tool for *in vitro* and *in vivo* optical imaging as well as *in vitro* fluorescent reporter in various bio-molecular detection assays and applications.

Biography

Ramar Thangam has completed his Ph.D. at the age of 29 years from at Proteomics & Molecular Cell Physiology Lab, Bharathiar University, School of life sciences, India. He has published more than 15 papers in reputed journals and serving as a reviewer board member of highly reputed journals. Currently he focused his research to the development of protein nanoparticles for the therapeutic applications in cancer science.