6. Conclusions
In spite of so many developments of techniques and so much enrichment of basic knowledge, cancers remain unsolved till date. Many conventional approaches are there which are very important to find out new compounds, agents to fight, treat or prevent cancer, but, new and non-conventional approaches are also required to identify as well as fight against cancer. Nature is full of wonderful chemicals which are needed to be identified. Most of the times those natural compounds show fewer side effects and can become very handy to develop new chemotherapeutic or chemopreventive agents. But in spite of so many advantages most of the time these it become difficult to take a compound or an agent form laboratory to clinical applications. Many issue were there one of the major issue among them is efficacy. In many occasions it has been found that these agents can’t show optimum efficacy at low concentration. Hence; new approaches are needed to potential agents useful as anticancer agents. Many times to for targeted drug delivery use of vectors (delivery agents) become very handy. Commonly the selected vectors are nontoxic in nature. But new approaches can be taken where vector itself can work as a drug and increase the efficacy of the treatment in synergistic way. Wise selection of modification of drug delivery agents is needed so that there efficacy of carrying drug and target specificity remain unaltered but their cytotoxicity increases. Further more; development of new anticancer agents is not the only issue to be addressed to fight with cancer. One of the biggest issues of cancer is ever increasing drug resistance. Every anti cancer drug works well at the initial phase of treatment but with days pass cancer tissue become resistant to that drug. More over; it has been found that when cancer tissues become resistant to a certain drug it become resistant to many other drugs, due to over expression of different proteins including p-Gp, MDR1 and BCRP1. For any drug development studies experimental animal models play very crucial role, but in the filed of resistance cancer due to lack of efficient experimental model, development took backlog. So measures needed to bust up the development of this field. In this work I have tried to address all these aspects of cancer treatment.

In the fast portion of the work it has been shown that Gold nanoparticles, well known drug delivery agents can be exploited for its anticancer activity. We found AuNPs is able to induce cancer cell apoptosis by disrupting onco-cellular microtubule network. Specific sized (40 nm) AuNPs induces conformational changes in the mammalian tubulin leading to loss of its functionality. Thus gold nanoparticles can be exploited for its anticancer properties along with other anticancer drugs for synergism.

In the second portion of the work approach we selected two compounds which have potential anticancer properties but do not have any adverse side effects. But these compounds could not be used for clinical practices due to their lower efficacy. Through experiments it has been shown here that these ligands bind the same target, tubulin (at two different sites) together and there by shows increased
efficacy. This finding assures to limit their side effects. These finding opened new options for novel combinational therapy to treat cancer. More over this approach opened new hope for curcumin, apigenin and many other naturally occurring nutraceuticals for their clinical application. Exploration of the knowledge will help to develop new drugs which will be effective against critical diseases including cancer, cheap and have less cytotoxicity.

In the final portion of the work anticancer property of Ginger aqueous extract was demonstrated. It has been found the active principle(s) of GAE induces cancer cellular apoptosis disrupting cellular microtubule structure. We also found GAE is not only effective against culture cell line it is also effective \textit{in vivo} for cancer treatment. GAE is very promising for treating both liquid and solid tumors in vivo. In addition to that we have it was also found that GAE can kill both taxol sensitive and taxol resistant tumors \textit{in vivo}. For the cancer drug resistant work in vivo drug resistant laboratory animal model have been developed. This technique has many advantages over pre-existing systems. Here, drug resistance developed under proper physiological conditions therefore, more understanding of the drug resistant phenomenon is possible. More over, there is need for immunologically challenged animals. In addition to that tumor can be easily transplanted from one animal to another in liquid form hence; sacrifice of animal during transplantation is not required and progress can be checked at any stage of development. As periodical transfer is possible so no need to worry about animal life span and can go up to higher dose; other wise would not be possible. If this technique can be generalized for different types of cancer and different animal model then it would be a major uplift in the cancer drug development field.