

**New Jersey State Commission on Cancer Research
LAY ABSTRACT OF RESEARCH PROJECT**

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Project Title: **In Vivo Efficacy and Proteomics Study Using a New Anticancer Compound**

Description: **To develop less toxic molecules from herbal and medicinal plants by understanding molecular mechanisms of their action *in viva* for developing new anticancer drugs. Such knowledge will help to develop better chemotherapeutic agents and to design more effective clinical trials in cancer.**

The overall goal of this proposal is to evaluate a new anticancer molecule Sesquiterpenelactones, which are present in the flowers of a medicinal plant (*Inula Britannica*), for its *in viva* efficacy and anti carcinogenic activity. We have isolated and identified a Sesquiterpenelactone, which induce Bcl-2 phosphorylation, causes G2/M cell cycle arrest and alters microtubule structure like known chemotherapeutic drug Taxol. The mechanism of action of this molecule is very similar to known chemotherapeutic drug Taxol. The following objective will be undertaken to perform this study. 1. To determine the *in viva* efficacy of these molecules in xenograft breast tumor models and to study the molecular mechanism of action. 2. Identification of novel regulatory proteins, transcription factors and alteration of protein expressions involved in tumor genesis using Protein chip technology .

Rationale: The treatment for cancer patients with chemotherapy is empirical. Even the most active drugs produce meaningful responses in <50 % patients. As a result, too many patients are needlessly exposed to highly toxic drugs and suffer the side effects without reaping the benefits. Our goal is to develop novel agents from herbal products with less toxicity for chemoprevention and cancer therapy. A new anticancer compound with less toxicity and mechanism of action very similar to Taxol will be an ideal molecule for the treatment of cancer .

Methodology: We will use a xenograft breast tumor model (nude mice) to see the *in viva* efficacy of the new anticancer compounds isolated from the medicinal plant. We will also use the state-of-the-art of Protein chip technology to study protein profile, identification of new regulatory proteins, transcriptional factors involved in tumor development. In addition, immunoblots, immunostaining, and RT -PCR will be used in this study.