

# 2<sup>nd</sup> International Conference on Pharmaceutics & Novel Drug Delivery Systems

20-22 February 2012 San Francisco Airport Marriott Waterfront, USA

## TITLE

### **Fabrication of Polyherbal Nanoparticles – A Targetted Herbal Drug Delivery for Lung Cancer**

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With the advancement in the technology, novel drug delivery system opens the door towards the development of herbal drug delivery systems. Nanotechnology has successfully achieved the delivery of herbal drugs to specific targets and thereby increasing their therapeutic efficacy. As tumour architecture cause nanoparticles to preferentially accumulate at the tumour site, their use as a drug delivery vectors result in the localization of a greater amount of the drug load at the tumour site, thus improving cancer therapy and reducing the harmful nonspecific side-effects of chemotherapeutics. Ethanolic extract of Polygala senega (EP) and Zingiber officinalis (EZ) has been reported to cause cell death and apoptosis in lung cancer cell line A549. Hence, the present study was planned to study if nano-encapsulation can enhance the anti-lung cancer property of EP, EZ and their combination. EP, EZ and combination of both (CEPZ) were nano-encapsulated (NEP, NEZ, NCEPZ) deploying a biodegradable poly – (lactic-co-glycollic) acid (PLGA) and their size were 157.5nm, 147.3 and 162.7 respectively. The small size of NEP, NEZ, NCEPZ resulted in an enhanced cellular entry and greater bio-availability, of which NCEPZ showed a tremendous potential. The growth of cancer cells was inhibited better by NCEPZ than others. NEP, NEZ, NCEPZ induced apoptosis of A549 cells, which was associated with decreased expression of survivin, PCNA mRNA and increased expression of caspase-3, p53 mRNAs. The results show that the anti-lung cancer potential of CEPZ-loaded nanoparticles was comparatively more effective probably due to its increased cellular uptake and anti-lung cancer potential, presumably by increasing drug bioavailability. Therefore, nano-encapsulated combined ethanol extract of Polygala senega and Zingiber officinalis may serve as a potential chemopreventive agent against lung cancer.

#### **Biography**

Associate Professor Umesh G. Jadhav completed his under graduation in 2004 and post graduation in 2006 at Rajiv Gandhi University of Health Sciences, Bangalore, Karnataka, India. He has 06 years of teaching and research experience in various fields of pharmacy particularly pharmacology. Associate Prof. Umesh G. Jadhav has spent 06 years in Pharmacy institution where he has held academic positions as Lecturer, Assistant Professor and now an Associate Professor. He has many project collaboration with various pharmaceutical companies in India. He is also an author / co-author of many research publications.