## 12<sup>th</sup> International Conference and Exhibition on **Pharmacovigilance & Drug Safety** 22<sup>nd</sup> International Conference and Exhibition on **Pharmaceutical Formulations** 21<sup>st</sup> Euro-Global Summit on **Toxicology and Applied Pharmacology**

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## Nanotechnology based delivery of natural plant extracts for enhanced treatment of cancer

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Photodynamic Therapy (PDT) is a promising treatment strategy for skin cancer like melanoma and squamous cell carcinoma (SCC), where photosensitizers (PS) interact with light of the proper wave length selectively at tumour site by producing reactive oxygen species that induce tissue destruction. Nano-carriers as transethosomes (TE) and lipid coated chitosan nanoparticles (LCCN) are promising carriers for the delivery of hydrophilic PSs in skin. Curcumin is the active principal of the herb curcuma longa which contains group of compounds called curcuminoids. Colorectal cancer is the leading cause of cancer-related mortality, annually responsible for around 655,000 deaths worldwide. 'Curcumin" loaded in nano-structured lipid carriers (NLC) coated with alginate is a promising drug delivery system (DDS) for colon targeting to enhance the accumulation of curcumin in cancer cells with low side effects. TEs, NLC and (LCCN) were characterized for their entrapment efficiency (EE), mean size, Additionally the nano-carriers penetration through skin were investigated by transmission electron microscope and confocal electron microscope. Moreover, the nano-carriers were also evaluated for PDT in SCC human cell lines and melanoma animal model. NLC were characterized for their *in vitro* release of curcumin in different pH simulating GIT fluids. NLC were also studied for their cytotoxic effects and cellular uptake on colon cancer cell line (Caco-2) as well as penetration through 3D spheroids of colon cancer cells.