Smart liposomes: multi-pronged means of targeting cancer

Ankit Jain[1, 2] and **Sanjay K Jain**[2]
[1]ADINA Institute of Pharmaceutical Sciences, India
[2]Dr. Harisingh Gour Central University, India

The present study was aimed to bring forth a multipronged approach for delivery of synergistically active combination of paclitaxel-topotecan (Pac-Top; 20:1, w/w) using surface modified and integrally designed liposomes. Various liposomes (size ~200 nm) viz. Liposomes (Lip), PEGylated liposomes (PL) and FR-targeted PEGylated liposomes (FPL) were developed using thin film casting technique. *In vitro* drug release study reflected sustained release kinetics at physiological conditions (37±0.5°C, pH 7.4) whereas abrupt dispersal (i.e. more than 90%) of liposomal content within 5 min at simulated tumor conditions (41±1°C, pH 4). These liposomes were studied for haemolytic toxicity studies, ex vivo pharmacodynamics (OVCAR-3 cell lines), florescence microscopy, and pharmacokinetics in ovarian tumor-bearing mice. *Ex-vivo* and *in-vivo* studies in tumor bearing mice documented a potentiated anticancer activity of FPL attributed to multifaceted features *viz.* thermosenstivity, long circulatory nature and targetability. Such multi-modal tactic of nanomedicine can be a promising tool for safe and efficacious drug delivery to tumor site.

ankitjainsagar@gmail.com
dr.jnankit@gmail.com