

Smart liposomes: Multi-pronged means of targeting cancer

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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 ($37\pm 0.5^\circ\text{C}$, pH 7.4) where as abrupt dispersal (i.e. more than 90%) of liposomal content within 5 min at simulated tumor conditions ($41\pm 1^\circ\text{C}$, pH 4). These liposomes were studied for haemolytic toxicity studies, *ex vivo* pharmacodynamics (OVCAR-3 cell lines), fluorescence 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. thermosensitivity, 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.

Biography:

Ankit Jain completed his B. Pharm. and M. Pharm. from Depart. Pharm. Sci., at Dr. H. S. Gour Central University, India. He is a recipient of valuable scholarships (JRF-UGC and UGC-RFSMS) and rewards (SASS and YJA). He owned number of best paper awards (more than 10) in national and international level seminars. He has published more than 35 international high repute publications (total impact factor above 65) including book chapters. He has been invited to present his research work at ESGO-2013 (Liverpool, UK), and Cancer Science and Therapy-2014 (Chicago, USA) with travel grant supports from DST (New Delhi) and ICMR (New Delhi), respectively. Currently, he is a PhD scholar (CSIR-SRF) under supervision of Prof. Sanjay K. Jain in his native university. His area of research is exploration of smart tactics for targeting cancer using "In/On"fabricated nano carriers.