

A comparative approach for preparation and physicochemical characterization of lecithin liposomes using chloroform and non-halogenated solvents

Sumaira Naeem

University of Malaya, Malaysia

Influence of organic solvents has become significant regarding clinical toxicology and risk assessment in various sustained release drug delivery systems. Drug delivery systems work through carriers, formulated most commonly by thin film methods. The use of solvents most importantly, the halogenated ones may result in severe toxicity according to International Conference on Harmonization of Technical Requirements for Registration of Pharmaceuticals for Human Use (ICH) Guidelines. A comparative study to evaluate the properties of lecithin was carried out using two non-halogenated solvents, acetonitrile and ethanol with commonly used chloroform. The effect of solvents and dispersion mediums was demonstrated using physicochemical properties, stability studies and % hemolytic activity. Similar characterization results indicated insignificant influence of solvents on the liposomes formulated in one particular dispersion medium. Increased sonication time resulted in decreased particle size in both buffer (pH 7.4) and water medium. The vesicles prepared from all test solvents exhibited better stability in former medium than the later when evaluated through their particle size and zeta potentials. Each sample was analyzed for *in vitro* % hemolytic activity over a range of 35.7 µg/ml to 600 µg/ml after incubation with fresh human red blood cells. The results recorded in buffer medium were in the range of 1-4 % which further proved this medium better than the other (range in water 35-50 %). Our finding indicated the comparable effect of solvents and suggested the preparation of thin films by less hazardous solvents rather than chloroform in terms of the environmental integrity and human health.

Biography

Sumaira Naeem has received her Master's degree from University of the Punjab, Lahore, Pakistan, in 2007. She is lecturer in chemistry, University of Gujrat Gujrat, Pakistan. She joined Department of Chemistry, Faculty of Science, University of Malaya, 50603 Kuala Lumpur, Malaysia, as a doctoral candidate in 2013 after getting study leave from University of Gujrat, Gujrat, Pakistan. Her research interests include development and *in vitro/in vivo* evaluation of targetable anticancer phospholipid drug carrier, red blood cell mimicking using phospholipid liposomes and its applications in drug delivery.

sumairamaan@gmail.com

Notes: