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Talegaonkar S, Tariq M, Alabood RM. Design and development of *o/w* nanoemulsion for the transdermal delivery of ondansetron. *Bull. Pharm. Res.* 2011;1(3):18-30.

Abstract: Oil-in-water nanoemulsion was developed as a tool for the transdermal delivery of ondansetron, a $5HT_3$ antagonist. With an objective to select appropriate components for the formulation development; screening of oils, surfactants and co-surfactants was performed on the basis of solubility of ondansetron in oils, solibilization capacity of surfactant for different oils and nanoemulsion area of S_{mix}, respectively. Pseudo ternary phase diagrams were constructed by aqueous titration technique and various nanoemulsion formulations were developed. The developed formulations were subjected to thermodynamic stability tests. In order to evaluate the effect of nanoemulsion on skin permeation, *ex vivo* permeation of drug was performed and compared with drug solution in oil, S_{mix} and aqueous suspension. The flux of nanoemulsion formulations were in the range from 109.8-178.9 $\mu g/cm^2/h$, significantly higher ($p<0.01$) than the oil solution (control, 31.08 $\mu g/cm^2/h$), S_{mix} (14.78 $\mu g/cm^2/h$) and aqueous suspension (11.75 $\mu g/cm^2/h$). The optimized formulation was subjected to various in vitro attributes. The mean droplet size, polydispersity index, zeta potential electrical conductivity, refractive index and pH were found to be 23.70 nm, 0.27, -8.7mV, 460.17 $\mu S/cm$, 1.412 and 6.2±0.219 respectively. The results of *ex vivo* permeation studies of developed nanoemulsion showed a great potential to replace oral conventional formulation and could be used for chemotherapy induced nausea and vomiting.

Key words: Nanoemulsion, Ondansetron, Ternary phase diagram, Flux, Permeability coefficient.

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