"STUDIES ON FORMULATION DEVELOPMENT AND EVALUATION OF MICROEMULSION SYSTEM OF ANTIHYPERTENSIVE DRUG"

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ABSTRACT

The aim of this work was to develop Furosemide microemulsion by exploiting the solubilising effect of microemulsion. Furosemide, a poorly water soluble loop diuretic, used as antihypertensive agent. Due to low solubility and less bioavailability of Furosemide, attempts were made to develope and optimize microemulsion formulation. On the basis of solubility study, Oleic acid, Tween 80 and Propylene glycol were selected as oil, surfactant and co-surfactant respectively for preparation of microemulsion. Microemulsion was prepared by water titration method. Pseudo ternary phase diagrams were constructed at various Tween 80 and Propylene glycol ratios. The 3:1 ratio represented greater area of microemulsification. The formulated microemulsions were evaluated for globule size, zeta potential, dissolution study and FTIR study. In FTIR studies, no interaction was found between drug and excipients. Various batches were produced using different concentration of oil, surfactant and co-surfactant yielded microemulsion in the range of 15 to 80 nm. The optimized microemulsion contained oleic acid 5%w/w, Tween 80: Propylene glycol 55%w/w, Water 40%w/w. The mechanism of drug release of Furosemide from microemulsion was observed to follow zero order kinetics. Moreover microemulsion was found to be stable over a period of one month at 40±2°C / 75±5% RH as per ICH guideline. The outcome of this study revealed the immense potential of microemulsion for delivery of Furosemide by improving its solubility and enhancement of dissolution rate.

Keywords: Furosemide, Microemulsion, Water titration method, Pseudo ternary phase diagram, Tween 80, PG, Oleic acid.