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Dissolution enhancement of Glibenclamide using liquisolid technology

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The purpose of this study was to improve the dissolution rate of a poorly soluble drug, glibenclamide using liquisolid technique. Different LS compacts were prepared using a mathematical model to calculate the required quantities of powder and liquid ingredients to produce acceptably flowable and compressible admixture. Propylene glycol was selected as the solvent. Avicel pH 102, Aerosil 200 and cross carmellose sodium were used as carrier, coating material and disintegrant respectively for preparing the tablets. The formulations were then evaluated for their flow properties such as bulk density, tapped density, compressibility index, angle of repose and Hausner's ratio. DSC and XRPD analysis were performed to know whether there is any interaction between drug and excipients and also to study the changes in drug crystallinity. The dissolution studies revealed that all the formulations have higher drug release rates than that of marketed and conventional tablets. The DSC and XRPD results showed that there is no interaction between the drug and excipients and also confirmed the existence of the drug in the solubilised form, which is proved by the absence of endothermic peak in DSC and reduction in the intensity of XRPD peaks. Among the different formulations prepared, LS-3 with a Lf value of 0.270 and R value of 30, was chosen as the best formulation based on its higher percentage release (91.35%). The study has produced encouraging results and it was concluded that Liquisolid technology can be used as an efficient method in improving the solubility and dissolution characteristics of poorly soluble drugs.

Biography

N Arun Kumar has completed his Ph.D. at the age of 34 years from Dr. MGR University, Chennai. He is working as Professor of Pharmaceutics in KMCH College of Pharmacy, Coimbatore. He has published more than 18 papers in reputed journals and also have received international travel grant under "Young Scientist Scheme" from ICMR, Delhi for presenting a research paper in Amsterdam, Netherlands. He has guided more than 20 research projects for postgraduate students.

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