Formulation and Evaluation of Fast Dissolving Tablets Using Beta Cyclodextrin Complexation

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Abstract

The aim of the present investigation was to develop a fast dissolving tablets using beta cyclodextrin complexation with an objective to enhance solubility and increase dissolution properties of Loratadine which is Histamine H_1 Antagonists. Complexation of Loratadine was carried out with beta cyclodextrin as a carrier by kneading and solvent evaporation methods and the prepared complexes were characterized by FTIR and optimized on the basis of solubility studies. The complex obtained by kneading method with 1:3 ratio of drug:beta cyclodextrin showed highest complex efficiency and solubility which was further used in preparation of Fast Dissolving Tablets (FDTs). Fast dissolving tablets were prepared by direct compression and sublimation method using superdisintegrants like indion 234 and Crospovidone at varying amounts. FTIR studies between drug and excipients suggested the absence of chemical interaction between the drug and excipients. Various batches were prepared using 3^2 factorial design. The amounts of indion 234

and crospovidone were taken as formulation variables (factors) and disintegration time and % drug release were taken as dependent variables (responses). The prepared batches of FDTs were evaluated for hardness, friability, weight variation, drug content, disintegration time, wetting time, *in vitro* dispersion time and drug release. The formulation S8 prepared by sublimation method containing 18.75 mg indion 234 and 18.75 mg crospovidone was selected as optimized formulation which showed disintegration time 20.66±0.57 second and drug release 95.31±0.549% after 15 minute. The two extra checkpoint batches were prepared and evaluated and closeness of predicted and actual values validated the design. The results of stability studies indicated no significant change in the tablet properties. The optimized batch was compared with marketed formulation which showed less disintegration and fast drug release as compared to marketed formulation. Thus, the fast dissolving tablets were successfully formulated to obtain less disintegration time and fast drug release.