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Formulation Development and Optimization of Controlled Release Nimesulide Tablets

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***SUMMARY*. Simple and cost effective study with central composite design was performed for the development of controlled release nimesulide tablets after using the hydrophilic polymer hydroxy propyl methyl cellulose (HPMC). Concentration of HPMC, Mg stearate and Avicel PH 102 were considered as variables while initially for powder blend micromeritic properties like compressibility index and angle of repose were taken as responses. Twenty formulations were designed by Design Expert Version 7.0.1. Compressibility Index (CI) showed excellent, fair and good results of formulations F22, F27 and F30, respectively. Single punch machine was used for the compression of nimesulide tablets adjusted weight 400 ± 70 mg. All physicochemical tests like weight variation, friability, hardness, and assay were within limits while dissolution studies was performed in 0.1N HCl, phosphate buffer pH 4.5, 6.8, and 7.4. Similarity (f_2) values of F22 and F30 with F27 were 76.891 and 68.195 in pH 1.2, 72.748 and 55.309 in phosphate buffer pH 4.5, 74.900 and 58.828 in slightly acidic pH 6.8, 80.791 and 45.697 in slightly basic pH 7.4. Drug release showed zero order and Higuchi release models due to their higher regression values. The values of n according to Korsmeyer-Pappas model also exhibit non Fickian drug release.**

KEY WORDS: Model dependent, Model independent and Fickian diffusion, Slow release.

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