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Formulation and evaluation of extended release drug delivery system of metformin hydrochloride

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Extended release pharmaceutical products became a very useful tool in medical practice, offering a wide range of actual and perceived advantages to the patient. Oral extended release drug delivery system becomes a promising approach for those drugs that are given orally, having the shorter half- life and high dosing frequency. Extended release provides promising way to decrease the side effect of the drug by preventing the fluctuation of the therapeutic concentration of the drug in the body. Recent trends indicate that multi particulate drug delivery systems are especially suitable for achieving extended release oral formulations with low risk of drug dumping, flexibility of blending to attain different release patterns as well as reproducible and short gastric residence time. The release of drug from pellets depends on the variety of factors including the carrier used to form pellets and the amount of drug contained in them. Consequently, pellets provide tremendous opportunities for designing new controlled and extended release oral formulations, thus extending the frontier of future pharmaceutical development. In the present study extended release tablets of Metformin hydrochloride (an oral anti-hyperglycemic drug) were formulated by using polymers of different viscosity grade such as HPMC K4M, HPMC K15M, HPMC K100M by wet granulation method. The formulated granules blends were evaluated for compatibility, angle of repose, true density, bulk density, compressibility index. The formulated tablets were subjected to thickness, weight variation test, hardness test, friability test and drug content. *In vitro* dissolution studies carried out in 6.8 phosphate buffer using the apparatus type 2 paddle type as described in the USP dissolution monograph. The best extended performance and the best *in vitro* drug release profile were achieved by formulation F5 which contains drug; HPMC K4M in a ratio of 1:6. The tablets were released the drug up to 12 hour and had maximum extended lag time. There was no significant change in physical and chemical properties of the tablets of formulation F5 after three months, parameters like% drug release and assay values at various conditions as per ICH guidelines.

Biography

Surendra Lalwani has received his Doctorate Degree from Department of Pharmaceutical Sciences, Dr. H.S. Gour University, Sagar. He has completed his B-Pharmacy and M-Pharmacy in pharmaceutical chemistry from Department of Pharmaceutical Sciences, Dr. H.S. Gour University, Sagar. His area of research focuses on Photodynamic Therapy (PDT) and Anti-Cancer activities. He is associated with various academic and scientific bodies as a life member of Indian Pharmaceutical Association, Indian Pharmacy Graduate Association, and Association of Pharmaceutical Teachers of India, Indian association of cancer research, Indian chemistry teachers association, International Society of Infectious Disease. He is Subject Expert of the various institutes/colleges/Universities in the country. He joined as a speaker at Pharmacoepidemiology Congress 2017 in Kuala Lumpur, Malaysia. He is a Reviewer/Referee of a number of national and international research journals. He had been awarded with Junior Research Fellow by UGC, New Delhi, India. He has 18 years of teaching experience. Currently he is working as a principal at Metro College of Health Sciences & Research, Metro College of Pharmacy Greater Noida.

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