Molecular Pharmaceutics & Organic Process Research

ISSN: 2329-9053

Extended Abstracts Vol 7, Iss2

Formulation and Bioequivalence Evaluation of Extended Release Solid Drug Delivery System for Metronidazole Using Eudragit NM30D and Methocel Premium K4M as Retardant Material

Md. Abdullah-Al-Mamun*, Md. Rashidur Rahman , Sujit Biswas, Sukalyan KumarKundu and Johir Rayhan
Department of Pharmacy, Jahangirnagar University, Savar, Dhaka-1342, Bangladesh
Department of Pharmacy, Jessore Science & Technology University, Jessore-7408, Bangladesh
Email : almamun.mmhju@gmail.com

ABSTRACT

Conventional indefinite quantity style of antiprotozoal drug create a drug blood level time profile which does not maintain inside the therapeutic vary for extended amount of your time. within the gift study, a shot was finished to develop Associate in Nursing extended unharness antiprotozoal drug composition which may be capable of delivering acceptable bioavailability for up to twenty four hours. Complete unharness formulations of antiprotozoal drug were ready employing a type of proportions of Eudragit NM30D and Methocel Premium K4M, on an individual basis through wet granulation. Eudragit NM30D and Methocel Premium K4M were use as agent material. 3 formulations (U-1 to U-3) were developed mistreatment Eudragit NM30D and whereas a brand new 5 (M-1 to M-5) mistreatment Methocel Premium K4M. The grain for tabletting were evaluated for wetness content, squeezability index and angle of repose etc. Tablets were subjected to thickness, stiffness, breakableness and in vitro unharness studies. Dissolution study of the developed pill matrices were administered in zero.1 N Hydrochloric acids for twenty-four hours stage. Dissolution profiles were then value with innovator's drug metronidazole ER in name only of distinction issue (f1) and similarity issue (f2). it absolutely was experimental that, formulation U-1, U-2, M-2, M-3, M-4 meet the need of bioequibalance with metronidazole ER. Among them, M-3 showed the easiest similarity and lowest distinction issue. it's evident from the study that, formulation M-3 posses all the desired characteristics to provide Associate in Nursing extended unharness antiprotozoal drug composition which can be stable enough and capable of delivering acceptable bioavailability for up to twenty four hours. Metronidazole (2-methyl-5-nitroimi-dazole-1-ethanol) is Associate in Nursing oral syntheticnitroimidazole antibiotic medication usedfor the treatment of infections caused byanaerobic bacterium and protozoa. it's anantibiotic, amebicide, and antiprotozoal drug.

Inthe past many matrix-type and polymeric-coated antiprotozoal drug formulations has been wide investigated as a result of it is a temporary plasma elimination [*fr1] life ranging from 6to seven hours. a good vary of controlled unharness matrices are developed supported hydrophilic polymers such ashydroxypropylmethyl polysaccharide (HPMC),hydroxypropyl polysaccharide (HPC), sodiumalginate, chitosan and xanthan gum. within the current study, a shot was created todevelop Associate in Nursing extended unharness Metronidazolecomposition which may be capable of delivering adequate bioavailability for upto twenty four hours. For this reason Eudragit NM30D and Methocel Premium K4M wereused as agent material. mistreatment numerous proportions of Eudragit NM30D and Methocel Premium K4M, complete unharness formulations of antiprotozoal drug were ready on an individual basis through wet granulation. The technology of chemical compound drug delivery has been studied in details over the past thirty years and numerous wonderful reviews area unit obtainable. The 3 key blessings that chemical compound drug delivery product can give area unit localized, extended delivery and stabilization of the drug. many reviewshave been given on the mechanisms and therefore the mathematical aspects of unharness of medication from compound matrices. For a givendrug, the discharge mechanics from the compoundmatrix is ruled preponderantly by 3 factors the polymer sort, polymermorphology and therefore the excipients gift in thesystem. The mechanisms of drug releasefrom numerous chemical compound matrix systems are extensively mentioned. Thediffusion of drug molecules to & from thematrix across the hydraulics diffusionlayer could also be treated as one-dimensionaldiffusion to a plane surface. Eudragit NM30D offers time controlled unharness and pH scale free dissolution, makes it appropriate for extended unharness antiprotozoal drug pill.On the opposite

hand, Methocel Premium K4Mshowed higher unharness agent impact forcontrolled unharness of pill. The objectiveof this study was to arrange Associate in Nursing extended unharness antiprotozoal drug pill that willsustain bioavailability of the drug for up to24 hours.

The present study was designed todevelop extended unharness tablets ofMetronidazole by mistreatment Eudragit NM30D andMethocel Premium K4M as rate retardingfactor on an individual basis by wet granulation methodology.Eudragit NM30D was employed in the planned formulations (U-1 to U-3) and MethocelPremium K4M in (M-1 to M-5) so as toevaluate the quantity of compound needed to produce desired unharness rate for twenty-four hours amount. The granules of planned formulations were evaluated for moisturecontent, angle of repose; compressibilityindex and drug content Moisture contentMoisture content of the granules forformulation U-1 to U-3 ranged from two.32 to2.87 and for formulation M-1 to M-5 rangedfrom one.63% to 1.85%.Angles of reposeThe results of angles of repose of planned formulations ranged from19.64±0.02 (º) to twenty three.15 ± 0.03 (º) (Table 4).Compressibility index (%)The results of squeezability index(%) of planned formulations ranged from14.55±0.02 to 20.34 ± 0.04 (Table 4).Drug contentThe drug content in a very weighed amountof all formulations ranged from ninety nine.14% to100.21%. of these results indicate that thegranules possess satisfactory flow properties,compressibility and drug content (Table 4).Evaluation of tabletThe tablets of the proposedformulations (U-1 to U-3 and M-1 to M-5)were subjected to varied analysis testssuch as thickness, hardness, weight variationtest and breakableness take a look at and drug content..Keywords: Retardant material, Eudragit NM30D, MethocelPremium K4M, Metronidazole