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Formulation and in vitro Evaluation of Sustained Release Matrix Tablets of Levetiracetam for Better Epileptic Treatment

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Abstract : The objective of the present study was to develop sustained release oral matrix tablets of anti epileptic drug levetiracetam. The sustained release matrix tablets of levetiracetam were prepared using hydrophilic matrix hydroxypropyl methylcellulose (HPMC) as a release retarding polymer by wet granulation method. Prior to compression, FTIR studies were performed to understand the compatibility between the drug and excipients. The study revealed that there was no chemical interaction between drug and excipients used in the study. The tablets were characterized by physical and chemical parameters and results were found in acceptable limits. In vitro release study was carried out for the tablets using 0.1 N HCl for 2 hours and in phosphate buffer pH 7.4 for remaining time up to 12 hours. The effect of polymer concentration was studied. Different dissolution models were applied to drug release data in order to evaluate release mechanisms and kinetics. The drug release data fit well to zero order kinetics. Drug release mechanism was found as a complex mixture of diffusion, swelling and erosion.

Keywords : levetiracetam, sustained-release, hydrophilic matrix tablet, HPMC grade K 100 MCR, wet granulation, zero order release kinetics
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