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عنوان مقاله:

Combinational approach using solid dispersion and semi-solid matrix technology to enhance in vitro dissolution of telmisartan

محل انتشار:

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خلاصه مقاله:

The present investigation was focused to formulate semi-solid capsules (SSCs) of hydrophobic drug telmisartan (TLMS) by encapsulating semi-solid matrix of its solid dispersion (SD) in HPMC capsules. The combinational approach was used to reduce the lag time in drug release and improvise its dissolution. SDs of TLMS was prepared using hot fusion method by varying the combinations of Pluronic-F۶۸, Gelucire ۵۰/۱۳ and Plasdone S۶۳۰. A total of nine batches (SD۱-SD۹) were characterized for micromeritic properties, in vitro dissolution behavior and surface characterization. SD۴ with ۵۲.۴۳% cumulative drug release (CDR) in phosphate buffer, pH ۷.۴, in ۱۲۰ min, t۵۰% ۴۴.۲ min and DE۳۰min ۹۶.۷۶% was selected for the development of semi-solid capsules. Differential scanning calorimetry of SD۴ revealed molecular dispersion of TLMS in Pluronic-F۶۸. SD۴ was formulated into SSCs using Gelucire ۴۴/۱۴ and PEG ۴۰۰ as semi-solid components and PEG ۶۰۰۰ as a suspending agent to achieve reduction in lag time for effective drug dissolution. SSC۶ showed maximum in vitro drug dissolution ۹۷.۴۹ % in phosphate buffer, pH ۷.۴ with in ۲۰ min that was almost a three folds reduction in the time required to achieve similar dissolution by SD. Thus, SSCs present an excellent approach to enhance in vitro dissolution as well as to reduce the lag time of dissolution for poorly water soluble drugs especially to those therapeutic classes that are intended for faster onset of action. Developed approach based on HPMC capsules provided a better alternative to target delivery of telmisartan to the vegetarian population.

کلمات کلیدی:

in vitro dissolution, lag time, HPMC capsules, solid dispersion, solubility

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