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Article

Preparation and Characterization of TPGSÃƒÂ¢Ã‚Â€Ã‚Â•Colloidal Silica Microparticles for Enhancement of Solubility and Oral Bioavailability of Lercanidipine Hydrochloride

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Abstract

In this study, colloidal silica microparticles containing solubilizing excipient were prepared using the sprayÃƒÂ¢Ã‚Â€Ã‚Â•drying process to enhance dissolution and oral absorption of lercanidipine hydrochloride. Several measurements including scanning electron microscopy, powder XÃƒÂ¢Ã‚Â€Ã‚Â•ray diffraction, particle size determination, *in vitro* dissolution, and pharmacokinetic study were conducted in rats. Among the tested solubilizing excipients, d ÃƒÂ¢Ã‚Â€Ã‚Â•ÃƒÂŽÃ‚Â±ÃƒÂ¢Ã‚Â€Ã‚Â•tocopheryl polyethylene glycol 1000 succinate (TPGS) dramatically enhanced the solubility of lercanidipine hydrochloride through micelle solubilization. In addition, TPGSÃƒÂ¢Ã‚Â€Ã‚Â•colloidal silica microparticles at the ratio of 1:10:10 (drug:TPGS:colloidal silica) showed rapid dissolution rate in all dissolution media and displayed higher area under the curve and maximum plasma concentration values compared with raw lercanidipine hydrochloride. Therefore, amorphous TPGSÃƒÂ¢Ã‚Â€Ã‚Â•colloidal silica microparticles fabricated using the sprayÃƒÂ¢Ã‚Â€Ã‚Â•drying process have great potential in the clinical application of lercanidipine hydrochloride.

Citing Literature

Number of times cited: 2

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