

**Studies on design and development of tablet in capsule system for Zolpidem  
Tartrate**

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**Abstract**

The objective of this present study was to design encapsulated mini tablet of Zolpidem Tartrate (ZT) for biphasic release and in vitro evaluation of the same. Encapsulated mini tablets comprised two layers, i.e. immediate release and extended release layer. The immediate release layer comprised croscarmellose sodium as a super disintegrant and the extended release layer comprised HPMC K100M as the release retarding polymers. FTIR studies revealed that there was no interaction between the drug and polymers used in the study. Direct compression method was used for formulation of the encapsulated mini tablets. In vitro dissolution studies were carried out in a USP apparatus I, basket method. HPMC K100M extended the release of drug from the extended release layer for 6 hr. The release of Zolpidem Tartrate was found to follow a pattern of Korsmeyer-Peppas, with Quasi-Fickian diffusion. Accelerated stability studies were carried out on the prepared encapsulated mini tablets in accordance with ICH guidelines. There were no changes observed in physicochemical properties and drug release pattern of encapsulated mini tablets. Biphasic drug release pattern was successfully achieved through the formulation of encapsulated mini tablets in this study.

Keywords: Zolpidem Tartrate, Encapsulated mini tablet, biphasic release system.