

# Global Pharma Summit

## August 10-12, 2015 Philadelphia, USA

### Bedtime dosing of dual pulse core-in-cup tablets of Metoprolol tartrate: Design and optimization

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The primary objective of the present investigation was to design and optimize bedtime dosing of dual pulse core in cup tablets to deliver the anti-hypertensive Metoprolol tartrate at an effective quantity predawn, when a blood pressure spike is typically observed in most hypertensive patients i.e. at night time and early morning hours. Preformulation studies and drug excipient compatibility studies were carried out for metoprolol tartrate and excipients. Trilayer core tablets (8 mm) containing alternative drug containing layers interposed by polymer layer and 12 mm core in cup tablets were prepared by direct compression. The 32 full factorial experimental design was applied to these core-in-cup tablets (F1-F9 formulae) with differing amount and percentage ratio of rate-controlling polymers, hydroxypropyl methyl cellulose K4M and PEO WSRN80. These tablets were subjected to various pre-compression and post-compression tests. The optimized batch was derived statistically using desirability function. The accelerated stability was carried out for tablets formulated using the optimized formulas. Results of preformulation studies were satisfactory. No interaction was observed between Metoprolol tartrate and excipients by Fourier Transform Infrared Spectroscopy. The results of pre-compression studies and post-compression studies were within limits. The varying time for 20% release of second dose and 90% drug release were optimized to obtain a formulation that offered a release profile with 5 h lag time, followed by complete drug release after 6 h. The results showed no significant bias between predicted response and actual response for the optimized formula. Bedtime dosing of dual pulse core in cup tablets may offer a promising alternative to control night as well as early morning hypertensive crisis.

#### Biography

Biraju D Patel, is working as an Associate Professor and Head of Post graduate Department of Pharmaceutics at Smt R B Patel Mahila Pharmacy College, Atkot, Gujarat, INDIA. She has 10 years of experience in pharmacy education and research. She has supervised researches of over 18 post graduate and PhD scholars and have published and presented more than 24 International and national research papers. She have presented two research posters in International conference of Nano DDS'10 at U.S.A. Today at the young age, having a blend of technical expertise, good aesthetic sense and creative mind, I got research funding of INR 3,50,000/- from GUJCOST, Government of Gujarat. She is an associate editor of two reputed International journals and an author to a book in subject of Pharmaceutical Microbiology & Biotechnology I (ISBN 9789351631958).

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