

Development of multi layered tablets using natural polymers

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Aceclofenac is a newer NSAID, used in treatment of osteoarthritis, rheumatoid arthritis and ankylosing spondylitis. Aceclofenac has shorter biological half-life around 4 h which makes it suitable for modified release to improve bioavailability and to reduce dosing frequency. Present work was aimed to develop and evaluate aceclofenac modified release (Triple Layer Tablet) TLT following direct compression technique using natural and synthetic polymers. Aceclofenac TLT containing immediate-release-layer (IM) as first layer, controlled-release-layer (CR) as second layer and ethyl cellulose layer as barrier-layer (BL) were prepared. IM was optimized by D-optimal design where 16 formulations (IM₁ – IM₁₆) were developed by using super disintegrating agents like mannitol and SSG. CR was optimized by 32 full factorial design and 9 batches (CN₁–CN₉ & CS₁–CS₉) were developed using natural and synthetic polymers like guar gum, xanthan gum and HPMC K100 CR, HPMC K100 LVCR respectively. Drug-polymers compatibility was evaluated by Infrared spectroscopy, where all compositions were found compatible without any interaction. All formulations were evaluated for various post-compression parameters like disintegration time (DT), swelling index, hardness, friability and weight variation etc., and results were found in desirable range. IM and CR formulations were evaluated for drug release behavior in pH 6.8 phosphate buffer and best release compositions among batches were chosen to prepare TLT with BL to modify the release. Among IM formulations least DT was found in IF₉ with 90.86% drug release in 10 min 21 sec so, IF₉ was claimed as best composition. Among CR formulations the best compositions found were CN₃ and CS₆ with Time at 47.38 % and 26.42% drug release around 8 h respectively and, were then developed as triple layered tablets with IF₉ where drug release was extended up to 24 h.

Biography

Dr. Rama Krishna Raparla is born in a small agricultural family in the year 1979. He has completed his graduation in the field of pharmacy in the home town and post graduation in Coimbatore in the year 2000 and 2003 respectively. He has done the research in the field of pharmacy in controlled release drug delivery systems by taking the natural polymers as a main source and completed in the year 2008. He has started his carrier in the same college where he has taken the under graduation in the year 2003 for a span of over half decade and right now working as a principal in a pharmaceutical organization. To his credit he has published more than 40 papers in a peer reviewed journals and is working as editorial board member in 2 international journals.

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