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TXPMT-Tamarind seed xyloglucan polysaccharide-based multilayer tablet for bimodal drug release

Ashlesha P Pandit, Waychal Pooja D, Kavita Kumari and Minal Chopda
JSPM Rajarshi Shahu College of Pharmacy & Research, India

Natural polysaccharides have been widely used because of their biocompatibility and biodegradability properties. An attempt has been made to explore tamarind seed xyloglucan (TSX), a glucosaminoglycan polysaccharide extracted from the kernels of seeds of *Tamarindus indica* Linn., family Fabaceae for bimodal (immediate and controlled) drug release of multilayer tablet. Chemically TSX powder is highly branched carbohydrate polymer. High drug holding capacity of this polysaccharide was investigated for bimodal release. An in-house extracted TSX polysaccharide was characterized for swelling index, flow property, viscosity and compatibility with drug. Multilayer tablet was comprised of immediate release layer of tramadol hydrochloride (an analgesic agent), followed by tri-layer. This tri-layer consisted of upper and lower barrier layers of TSX and middle layer of drug granular matrix. Multilayer tablets were compressed based on 3² factorial design considering concentrations of matrix and barrier TSX layers as independent variables. Immediate release layer released the drug within 90 min in acidic media, revealing the retarded action showed by polysaccharide layer attached to this layer. Granules of matrix layer were prepared by wet granulation technology. Multiplayer tablet of TSX was evaluated for hardness, thickness and drug content. Dissolution test in presence of rat caecal content was found to control the drug release rate for more than 9h. Stability studies confirmed the stable formulation. Thus, this study suggested that inexpensive and abundantly available natural TSX can act as a potential polymer for bimodal release of a multilayer tablet.

Biography

Ashlesha P Pandit has completed PhD from RTM Nagpur University. She is the Associate Professor (Pharmaceutics) of JSPM Rajarshi Shahu College of Pharmacy & Research, Pune, India, affiliated to University of Pune. She has 13 years of teaching and research experience. She has more than 8 publications and 1 patent to her credit. She is serving as referee and guest editor for reputed journals. Her areas of research interest are exploration and application of natural polymers in various drug delivery systems, solubility enhancement of poorly-water soluble drugs and formulation development of multi-particulate, enteric coated and medicated chewing gum as drug delivery system.

panditashleshap@rediffmail.com