Asian Journal of Pharmaceutical Research and Development
(An International Peer-Reviewed Journal of Pharmaceutical Research and Development)
www.ajprd.com

NA-TPP CROSS-LINKED CHITOSAN MICROSPHERES FOR CONTROLLED RELEASE OF TRAMADOL HYDROCHLORIDE

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Received: 28 January 2013, Revised and Accepted: 04February 2013

ABSTRACT

*In this study preparation and evaluation of Tramadol Hydrochloride (TM) microsphere prepared by emulsion crosslinking method with biodegradable polymer as chitosan. Chitosan was carrier by using physical crosslinking with Sodium Tripolyphosphate (Na-TPP) to avoid toxicity of chemical cross–linking agent (glutaraldehyde) and other undesirable effects.Prepared microspheres were subjected to variousphysico-chemical studies, such as drug-polymer compatibility by FourierTransform Infrared Spectroscopy (FTIR) and Differential scanning colorimetry (DSC), surface morphology by scanning electron microscopy (SEM), frequencydistribution, encapsulation efficiency, in-vitro drugrelease characteristics and release kinetics. FTIR studies reveled that there is no drug-polymer incompatibility. Surfacesmoothness of microspheres was increased by increasing the polymer concentration, which was confirmed by SEM. As the drugto polymer ratio was increased, the mean particle size (MPS) of TM microspheres was also increased. A maximum of 87% of drug entrapment efficiency was obtained by the method employed. All the microspheres showed initial burst releasefollowed by a Fickian diffusion mechanism. It is possible to design a controlled drug delivery system for the prolongedrelease of TM, improving therapy by possible reduction of time intervals between administrati**ons.***

Keywords: *Tramadol Hydrochloride, Microspheres, Emulsification method, Chitosan.*