

Formulation and evaluation of chitosan microspheres as a delivery system of risperidone

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Background and Aims: Risperidone is an antipsychotic agent used for treatment of schizophrenia for more than two decades. Chronic nature of schizophrenia caused long term use of antipsychotic drugs especially risperidone. Moreover, less compliance of schizophrenic patient faced the remedies to failure in most cases. The aim of this study was to formulate and evaluate of Chitosan-Risperidone microspheres as a sustained delivery system.

Methods: Chitosan (100 mg) was dissolved in acetic acid 2% solution. Risperidone (20 mg) and Span 80 were dissolved in dichloromethane. The risperidone solution was added drop wise into Chitosan solution under homogenizer. After evaporation of dichloromethane the solution was centrifuged (14000 RPM for 0.5 h) followed by lyophilization. The microspheres were evaluated for size distribution, zeta potential, surface structure, drug loading and release profile.

Results: The prepared microspheres were in size range of $80\mu \pm 12$ and zeta potential of +7mV. The microspheres were spherical in shape and with smooth surface. Drug encapsulation of Chitosan microspheres were 72% in optimum formulation. Release study showed that risperidone was released from microspheres with minimum burst effect (less than 15% in first 24h) and followed to 13 days.

Conclusions: Chitosan is a biocompatible and biodegradable polymer which is widely used in pharmaceutical formulations. Formulation parameters play an important role in fabrication of Chitosan microspheres. Results of this study show that Chitosan microspheres are good candidate to sustain delivery of Risperidone for an acceptable period of time.

Keywords: Microsphere; Risperidone; Chitosan