DEVELOPMENT AND ASSESSMENT OF RISPERIDONE-LOADED NIOSOMAL *IN SITU* GEL FOR NASAL DRUG DELIVERY

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ABSTRACT

Risperidone, a second-generation antipsychotic medication, is extensively used to cure psychiatric disorders. The oral administration of risperidone is often associated with poor bioavailability and significant side effects. To overcome these limitations, we designed and developed a novel dosage of risperidone containing niosomal gel for intranasal delivery. In this study, we prepared niosomes using a novel lipid composition comprising of non-ionic surfactant (Span 40) and cholesterol. Using a thin-film hydration technique, risperidone was added to the niosomes. The resulting gel was then evaluated for particle size, zeta potential, encapsulation effectiveness, and *in vitro* release profile. The results showed that the niosomal gel exhibited a mean particle size of 429.1 nm, a zeta potential of -30.1 mV, and an encapsulation efficiency of 84.23%. The *in vitro* release investigations demonstrated an 8 h sustained release pattern, consisting of a regulated release phase after an initial burst release. This study demonstrates the potential of risperidone-loaded niosomal gel as a novel and effective delivery system for intranasal administration. Better stability, bioavailability and therapeutic efficacy were made possible by the combination of cholesterol and non-ionic surfactant in the niosomes formulation. This research offers a viable path toward developing novel dosage forms for the management of mental illnesses.