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पेटेंट कार्यालय का एक प्रकाशन
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(54) Title of the invention : DEVELOPMENT AND EVALUATION OF INTRANASAL MUCOADHESIVE GEL CONTAINING DRUG AND POLYMER

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(57) Abstract :

The present invention relates to an intranasal mucoadhesive gel formulation comprising tramadol hydrochloride and chitosan as natural bioadhesive polymer designed for controlled and sustained drug release through nasal mucosa. Five formulations containing varying concentrations of chitosan ranging from 0.1 to 0.5 percent weight by volume were prepared and systematically evaluated for physicochemical properties including pH, viscosity, spreadability, drug content, and in-vitro diffusion characteristics. Fourier transform infrared spectroscopy analysis confirmed complete compatibility between tramadol and chitosan with absence of chemical interactions ensuring formulation stability. The optimized formulation containing 0.3 percent weight by volume chitosan demonstrated superior balance of mucoadhesive strength, appropriate viscosity, and sustained release profile releasing 50 percent drug within 2 to 4 hours with cumulative release of 94.37 percent over 5 hours. Drug content across formulations ranged from 90.62 to 96.37 percent. Kinetic modeling revealed drug release following Hixson-Crowell model indicating dissolution-controlled mechanism.

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