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(57) Abstract :
The present invention relates to a sustained-release transdermal film formulation for the controlled delivery of anxiolytic agents using natural biodegradable polymers. The formulation comprises a polymer matrix containing chitosan, hydroxypropyl methylcellulose, and sodium alginate incorporating benzodiazepine-class anxiolytic agents such as alprazolam. The natural polymer matrix provides biocompatibility, bioadhesion, and controlled drug release characteristics. Permeation enhancers including oleic acid and propylene glycol are incorporated to facilitate drug transport across the stratum corneum. The transdermal films are prepared by solvent casting method and exhibit sustained drug release over twenty-four to seventy-two hours following zero-order kinetics. The formulation bypasses hepatic first-pass metabolism, maintains consistent plasma drug concentrations, reduces dosing frequency, and enhances patient compliance. The films demonstrate adequate mechanical properties, favorable skin compatibility, and stability under accelerated storage conditions. This invention provides an effective non-invasive alternative to conventional oral anxiolytic therapy with improved therapeutic outcomes.

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