

Novel Wound Healing Biodegradable Patch of Bioactive

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Abstract : The present research was aimed to develop a biodegradable dermal patch formulation for wound healing in a novel, sustained and systematic manner. The goal is to reduce the frequency of dressings with improved drug delivery and thereby enhance therapeutic performance. In present study optimized formulation was designed using component polymers and excipients (e.g. Hydroxypropyl methyl cellulose, Ethylcellulose, and Gelatin) to impart significant folding endurance, elasticity and strength. Gelatin was used to get a mixture using ethylene glycol. Chitosan dissolved in suitable medium was mixed with stirring to gelatin mixture. With continued stirring to the mixture Curcumin was added in optimized ratio to get homogeneous dispersion. Polymers were dispersed with stirring in final formulation. The mixture was sonicated casted to get the film form. All steps were carried out under strict aseptic conditions. The final formulation was a thin uniformly smooth textured film with dark brown-yellow color. The film was found to have folding endurance was around 20 to 21 times without a crack in an optimized formulation at RT (23°C). The drug content was in range 96 to 102% and it passed the content uniform test. The final moisture content of the optimized formulation film was NMT 9.0%. The films passed stability study conducted at refrigerated conditions (4±0.2°C) and at room temperature (23 ± 2°C) for 30 days. Further, the drug content and texture remained undisturbed with stability study conducted at RT 23±2°C for 45 and 90 days. Percentage cumulative drug release was found to be 80% in 12 h and matched the biodegradation rate as drug release with correlation factor R² > 0.9. The film based formulation developed shows promising results in terms of stability and release profiles.

Keywords : biodegradable, patch, bioactive, polymer

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