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ABSTRACT

In-situ gel refers to the liquid formulation which gellifies to gel form at the site of application according to some specific environmental stimuli. This makes them of high value in pharmaceutical and biomedical applications. In this research study we have formulated quercetin loaded *in-situ* gel. This study engages in the development as well as the full characterization of a new *in-situ* gelling system for wound healing application. A thermoresponsive *in-situ* gel formulation was prepared based on HPC, combined with chitosan as an additional for its mucoadhesive properties and antimicrobial activity. Quercetin drug was added in the formulation based upon its antioxidant, anti-microbial, anti-inflammatory properties. Through rheological studies, the formulation was optimized, with the final composition indicating a sol-gel transition at $37 \pm 0.5^\circ\text{C}$ and, therefore, considered suitable for topical wound application. Physicochemical characterization showed acceptable values for pH (5-5.5), viscosity, and spreadability to meet wound environment expectations.