

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202511093994 A

(19) INDIA

(22) Date of filing of Application :30/09/2025

(43) Publication Date : 14/11/2025

(54) Title of the invention : PLUMBAGIN-LOADED THERMOSENSITIVE INJECTABLE HYDROGEL

(51) International classification	:A61K0009000000, A61L0027520000, A61K0031122000, A61K0047320000, A61K0009060000	(71)Name of Applicant : 1)Chitkara University Address of Applicant :Chitkara University, Chandigarh-Patiala National Highway, Village Jhansla, Rajpura, Punjab - 140401, India Punjab India 2)Chitkara Innovation Incubator Foundation
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(61) Patent of Addition to Application Number	:NA	
Filing Date	:NA	
(62) Divisional to Application Number	:NA	
Filing Date	:NA	

(57) Abstract :

The present invention relates to a plumbagin-loaded thermosensitive injectable hydrogel for the treatment of diabetic wounds. The hydrogel comprises plumbagin as an active agent, a natural polymer for structural integrity, a thermosensitive polymer for sol-gel transition, an organic solvent for drug solubilization, and an aqueous medium as carrier. The formulation remains liquid at low temperature and rapidly gels at body temperature, enabling localized administration. The system provides sustained release of plumbagin, enhanced stability, reduced cytotoxicity, and antimicrobial activity. In vivo studies demonstrate significant wound-closure improvement, making the hydrogel a scalable, biocompatible, and effective platform for diabetic wound management. Reference Fig 1

No. of Pages : 33 No. of Claims : 2