

Translational Research on Chitosan in Healthcare

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Chitosan, a versatile biopolymer derived from chitin, is revolutionizing biomedical applications with its unique properties. Our research aims to develop chitosan-based innovative materials such as hemostatic sprays, gels, and antiseptic lotions tailored to address critical medical needs. Our hemostatic sprays and gels leverage chitosan's innate rapid erythrocyte adhesion and platelet activation properties, along with the incorporation of inorganic agents to boost the coagulation process in order to swiftly arrest bleeding in surgical emergencies, sports and battlefield injuries. Additionally, we have also formulated antiseptic sprays targeted to facilitate wound debridement, promoting a clean wound bed conducive to healing, suitable for both acute and chronic wound care. Meanwhile, we have also formulated antiseptic lotions to combat onychomycosis (nail infections) via chitosan's inherent antifungal activity amplified with the addition of antifungal and exfoliating factors, while maintaining skin-barrier integrity. This strategic fusion of chitosan's versatility with bioactive agents offers scalable, patient-centric solutions for hemorrhage and infection control, bridging laboratory breakthroughs to life-saving bedside applications.