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Formulation and evaluation of Pap-aloe hybrid microfibers for wound healing application

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Wound healing is a complex and dynamic biological process. In recent years, the development of new wound dressing products from marine sources is gaining increased interest due to their unique properties such as antimicrobial activity (e.g. chitosan), its biocompatible, biodegradable, non-toxic and non-allergenic nature. Most of these peculiar properties arise from the presence of primary amines along the chitosan backbone. This study was aimed to formulate a hybrid combination of papaya leaves extract and aloevera for developing antimicrobial activity and wound healing applications. Aqueous leaves extract from papaya and aloevera and their hybrid combination were used to develop chitosan fibers. Chitosan polymer containing these extracts was extruded in calcium chloride bath to develop Aloevera (AV), papaya (PP) and their hybrid combination-based chitosan fibres AP1-AP5. The wound healing properties of the selected combination will be synergistic with the selected natural extract to be incorporated in the all fibers. Molecular mechanistic studies were studied for molecular interaction between the combination of natural extract and and their effect on physicochemical properties of the fibers. The surface morphology, spectra, liquid absorption, tensile strength and anti microbial activity of different batches of the microfibers were evaluated. Aloevera fibers showed greater tensile strength than the papaya extract fibers. The liquid absorption property of all developed fibers decreased, but showed anti-bacterial growth to 70% as compared to pure chitosan fibers. Aloe vera, papaya and hybrid extract-based chitosan microfibers have great potential to be used in wound dressings.

Biography

Ameya Sharma has completed her Masters in Pharmacy from Chitkara College of Pharmacy, Chitkara University, India. She is currently pursuing her Doctorate of Pharmacy at the same university. She has been awarded for her research work in global conferences and national conferences. She has communicated more than 5 papers in reputed journals and has been serving as an Assistant Professor in Industrial Teaching at Dr. Reddy's Laboratories, Baddi, India.

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