Preparation and characterization of alginate/chitosan composite scaffo for wound dressings

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ABSTRACT

Wound pain, tissue trauma and infection are the main considerations of wound managem appropriate dressing selection plays an important role in all. Traditional dressings may adhere to w resulting in significant pain and trauma to new tissue upon removal. And superficial infec microorganisms are the other problems resulting in complications and delayed wound healing. Cur lot of research is focused on developing newer dressing materials to treat wounds with control re devices to improve the functional and aesthetic outcome of the regenerating skin or scar tissue. Alg and chitosan are natural biopolymers with properties like biocompatibility and biodegradability. Th widely used as scaffolds for tissue engineering applications. In this study, we developed and charac novel alginate/chitosan composite scaffolds with surface incorporating calcium ion, as a new-ty dressing for wound healing applications. The physicochemical properties of the prepared com scaffolds were also studied by Cone and Plate viscometer, texture profile analyzer and DSC. T alginate/chitosan composite scaffolds were found to exhibit great viscosity, bioadhesion and showed h tensile strength. In addition, it was observed that the mechanical properties of the matrices increase alginate/chitosan concentration. Alginates with elongated alternating sequences displayed, upon tre with calcium solution, a notable decrease in swelling behavior, which was not paralleled by dete mechanical properties (Young's modulus). The non-adherent nature of scaffold surface provid protective covering to the wound, may also offer benefits in prevention trauma of new tissue.

These results suggested that these alginate/chitosan composite scaffolds could be used for w healing applications.

Key words: Alignate, Chitosan, Hydrogel, Wound dressing, Texture profile analyzer