

Study on chitosan-poly vinyl alcohol gauze encapsulated with transexamic acid for hemostasis

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Abstract

Chitosan is the deacylitated derivative of chitin, the second most abundant biopolymer just after cellulose. Without doubt, its biomedical usages have gained more importance among the vast variety of chitosan applications owing to its good biocompatibility and biodegradability. In recent years, particular interest has been devoted to chitosan hydrogels as a promising alternative in competition with conventional sutures or bioadhesives. Different parameters such as acid type and concentration, and degree of deacetylation (DD%) of chitosan, were altered to modify hydrogel properties including viscosity, pH, cohesive strength, and tissue bioadhesiveness. In the current work, we have investigated the effectiveness of chitosan hydrogel encapsulated with tanexamic acid to stop bleeding. Chitosan film was obtained with solubilization of chitosan powder in aqueous acidic media. *In vivo* experiments have been conducted on rat and rabbit models that provide a convenient way to evaluate the efficacy of prepared samples. The arteries vein was punctured on the hind limb of the rat and the gauze was been applied on the punchered area. Bioadhesive strength as well as irritant effects were discussed. Samples with higher degree of deacetylation, including Chs- 16 and Chs-19 that were dissolved in lactic media showed best sealing effect.