

Bacterial cellulose membrane used as biological dressings on third-degree burns in rats

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Abstract.

INTRODUCTION: Burn injuries represent a high risk of morbidity and mortality. The wound healing process is complex and requires the participation of different types of cells. Therefore, new biomaterials, which innovate the wound healing process, are being investigated.

OBJECTIVE: The aim of this study was to investigate the use of bacterial cellulose both in its pure state and enriched with lidocaine in full-thickness burns in rats.

METHODS: Thirty rats (Wistar) (260 ± 20 grams) divided into control group (CG), bacterial cellulose membrane group (MG) and bacterial cellulose membrane enriched with lidocaine group (MLG) were used. The burns were induced using a 150°C heated soldering iron, held on the animal neck for 10 seconds. The biomaterial was applied immediately after injury and skin samples were collected on the tenth day of the treatment. The level of significance of $p \leq 0.05$ was used for the conclusion of the statistical analysis.

RESULTS: The groups treated with the biomaterials, a histological pattern compatible with a more advanced repair stage showing skin appendages, mild inflammatory infiltrate, better collagen fiber organization and mild immunostaining COX-2 and MMP-9 was observed, when compared to the control group that did not receive any type of treatment.

CONCLUSION: Thus, was concluded that the bacterial cellulose-based biomaterial both in its pure state and enriched with lidocaine optimizing the full-thickness burn wound healing in rats.

Keywords: Burn, biomaterial, skin, wound healing