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# Chitosan Hydrogel in combination with Nerolidol for healing wounds

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## Abstract

Chitosan is a natural polymer with antibacterial property, that is biodegradable, extremely abundant and non-toxic. This study aimed to develop and characterize chitosan hydrogels in combination with nerolidol, in order to optimize the antimicrobial and healing properties. The hydrogels were prepared using a reaction of the chitosan with acetic acid solution, followed by the addition of 2 or 4% of the nerolidol. Using thermogravimetry, differential scanning calorimetry and infrared spectroscopy, the incorporation of nerolidol in the hydrogel was confirmed. Direct contact tests using hydrogels and *Staphylococcus aureus* showed a synergistic effect in the materials, enabling total inhibition of bacterial growth. The hydrogel containing 2% nerolidol showed excellent healing effects. The beginning of re-epithelialization and reorganization of collagen was already observed on the 7th day of treatment. The material created proved to be promising as a healing and antibacterial agent.

**Keywords:** Bactericide; Cicatrization; Dressing; Drug; Gel; Healing; Injury.

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