

# Development of Biopolymeric Films for the Potential Treatment of Superficial Wounds †

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**Abstract:** The treatment of superficial wounds is essential for proper healing, avoiding complications caused by microorganisms. It is interesting to consider the formulation of a low-cost device (film) presenting adequate therapeutic efficacy and acceptability for the patient. Methods: The polymers used to obtain the films were chitosan (cationic), gum arabic (anionic), and HPMC (neutral), while PEG 400 was used as a plasticizer. The gels (obtained by mixing different polymer solutions) were dehydrated at different temperatures (30, 40, and 50°C) and times (12, 24, and 48h). The rheological behavior of the gels was determined, and after drying, the swelling index, appearance, weight, and thickness of the films were evaluated. Additionally, the antimicrobial activity against *Candida albicans* was carried out using the halo zone test. Results: The gels showed a pseudoplastic rheological behavior with thixotropy. The films presented good macroscopic characteristics were slim, adhesive, and showed uniform weight. The optimum drying condition was 40°C for 24 h. All films showed flexibility and slight activity (1-5 cm halo) against *C. albicans* cultures. Conclusions: The films presented adequate characteristics to be potentially used in treating superficial wounds; it is necessary to carry out assays in laboratory rats to analyze their capacity to produce protection and faster healing avoiding possible infections.

**Keywords:** biopolymeric films; superficial wounds; chitosan.

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## Conflicts of Interest

The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.