



DEVELOPMENT OF A SHAVING BAR SOAP USING NANOENCAPSULATED ESSENTIAL OIL OF CANELA SASSAFRÁS (*Ocotea odorifera*)

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INTRODUCTION

The demand for natural cosmetics drives sustainable formulations. Brazil, a major consumer of male grooming products, offers opportunities for innovation, particularly in shaving soaps with bioactive ingredients. *Ocotea odorifera* essential oil, rich in antioxidant and antimicrobial properties, has a woody fragrance but is unstable. Nanoencapsulation enhances its stability and controlled release. This study developed a shaving soap incorporating *O. odorifera* oil, analyzing its composition, bioactivity, and nanotechnology effects.

MATERIAL AND METHODS

The study involved essential oil extraction, aqueous extract preparation, nanoencapsulation, and soap formulation. The essential oil of *O. odorifera* was extracted via hydrodistillation, while aqueous extracts were obtained through infusion, evaporation, and lyophilization. Bioactive compounds were quantified using UV-VIS spectrophotometry, and antioxidant capacity was evaluated via the DPPH method. Nanoencapsulation was performed using Poloxamer 188, with particle size analyzed via dynamic light scattering (DLS). Antimicrobial efficacy against *Staphylococcus aureus* and *Candida albicans* was tested using the Minimum Inhibitory Concentration (MIC) method. A glycerin-based soap was formulated.

RESULTS

The essential oil yield was 1.41%. Phytochemical analysis showed high concentrations of phenolics (104.256 µg/mg), flavonoids (14.704 µg/mg), and carotenoids (261.707 µg/mg), indicating strong antioxidant potential. Antioxidant activity was concentration-dependent, reaching 84.36% DPPH inhibition at 50 mg/mL. Nanoencapsulation resulted in a polydisperse system with a mean particle size of 597.8 nm. Antimicrobial testing revealed superior efficacy of pure essential oil, with MIC values of 6.25 mg/mL for *S. aureus* and 0.781 mg/mL for *C. albicans*. The nanoencapsulated oil showed no significant improvement in antimicrobial activity, likely due to limited bioactive release. The formulated shaving soap exhibited desirable consistency, a characteristic woody aroma, and satisfactory foaming properties.

CONCLUSIONS

The study confirmed the antioxidant and antimicrobial potential of *O. odorifera* essential oil for cosmetic use. However, nanoencapsulation showed limited antimicrobial improvement, requiring optimization. The shaving soap exhibited promising properties, but further research is needed to ensure bioactive stability.

