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CHITOSAN BIOFILMS WITH ETHANOLIC EXTRACT OF Libidibia ferrea LEAVES: ANTIBACTERIAL POTENTIAL

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Chitosan is widely used as a base for synthesizing biofilms with potential applications in food preservation and wound healing. Thus, combining medicinal plant extracts with chitosan to prepare biofilms is a strategy for discovering new antimicrobial materials. Given this context, were developed the synthesis and antimicrobial evaluation of biofilms from the ethanolic extract of *Libidibia ferrea* stem and its fractions in ethyl acetate and water. Antimicrobial assays were conducted against *Staphylococcus* sp, *Bacillus* sp, *Escherichia* sp, *Pseudomonas* sp, *Candida* sp by broth microdilution and agar diffusion methods. The chitosan film with the extract (FQEEt) and the crude extract (EEt) were active against S. aureus. [inhibition zone (IZ) of FQEEt = 1.41 ± 0.07 cm; IZ of crude EEt = 1.40 ± 0.1 cm]. However, the crude EEt also inhibited *B. cereus* [IZ = 1.40 ± 0.1 cm]. The chitosan films with fractions FFEtOAc and FFAQ inhibited *S. aureus* [IZ = 1.2 ± 0.1 cm] and *B. cereus* [IZ of FFEtOAc = FAQ = 1 ± 0.1 cm]. The pure chitosan film (100%) showed no antimicrobial effect. In the broth microdilution tests, the FAQ fraction was bacteriostatic against *S. aureus* [MIC = 500 µg mL^{-1}] and bactericidal for *B. cereus* [MIC = MBC = 250 µg mL^{-1}]. Meanwhile, the FEtOAc fraction showed both effects for *S. aureus* [MIC = MBC = 500 µg mL^{-1}] and *B. cereus* [MIC = 125 µg.mL^{-1} and MBC = 250 µg.mL^{-1}]. Tetracycline showed MIC = MBC ≤ 7,8 µg .mL^{-1} for both bacteria. The results demonstrated that the antimicrobial activity of the biofilms was due to the incorporation of *L. ferrea* samples, highlighting the potential of these materials for long-term use as antimicrobial packaging and/or wound dressings. The authors would like to thank FAPESB, UNEB, PGQA, UFBA, UFMG, and CAPES for their financial and institutional support, which was essential for the development of this research.

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