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ANTIMICROBIAL PROSPECTION OF CHITOSAN BIOFILMS WITH ETHANOLIC EXTRACT FROM Libidibia ferrea STEM

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The aqueous and alcoholic extracts of the fruit of *Libidibia ferrea* (Fabaceae family) are used in traditional medicine as antibacterial, antifungal, and wound healing agent. The antibacterial and antifungal prospecting of the aqueous (EAQ) and ethanolic (EET) extracts of the fruit of *L. ferrea*, as well as their biofilms produced based on chitosan, was developed against eight strains of microorganisms. The crude aqueous (EAQ) and ethanolic (EET) extracts of the fruits were antibacterial against *Staphylococcus epidermidis* (MIC = 15.63 µg mL^{-1}, for both; MBC = 500 µg mL^{-1}, only for EET), *Bacillus subtilis* and *B. cereus* (MICs = 1000 µg mL^{-1}). Regarding the fungicidal effect, only EET was active against *Candida albicans* [MIC = 15.6 µg mL^{-1}; MFC = 31.25 µg mL^{-1}). The FQEET 30% biofilm was more active against *Micrococcus luteus*, among all microorganisms tested, with values of growth inhibition zone (ZI) = 2.05 mm, by agar diffusion method. The biofilms of the aqueous extract of chitosan, FQEAQ, and the ethanolic extract (FQEET) showed ZIs in the range of 1.06 mm to 2.56 mm for *M. luteus, S. aureus, and S. epidermidis*, respectively. The chitosan biofilm (100%) did not exhibit an inhibitory effect against the tested microorganisms. Thus, the antimicrobial activity presented by the biofilms was due to the compounds present in the extracts, which are mainly phenolic derivatives [total phenolic (TP): EAQ: 327.95 ± 14.61 µg mg^{-1} EAG; (TP): EET: (292.06 ± 24.35 µg mg^{-1} EAG)] e [total tannins (TT): EAq: 227.74 ± 17.43 µg mg^{-1} of EAT; EEt = 189.49 ± 20.92 µg mg^{-1} of EAT]. This study has resulted in the production of antimicrobial biofilms from chitosan extracts of the fruit of *L. ferrea*, with long-term potential for use in the treatment of antimicrobial infections in skin wounds. Acknowledgments: FAPESB, UNEB, PGQA, UFBA, UFMG, CAPES.

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