TITLE: PRODUCTION OF RHAMNOLIPIDS AND ITS ANTIMICROBIAL ACTIVITY AGAINST *Bacillus cereus.*

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ABSTRACT:

Increasing awareness of consumers about environment and health stimulate industry to search for more sustainable and natural products. Biosurfactants (BS) are environmental-friendly and natural surface-active agents synthesized by microorganisms. Rhamnolipids (RL) are biosurfactants obtained from *Pseudomonas* sp. that have attracting attention as an alternative to chemical surfactants, once they are produced from renewable sources, present low toxicity, biodegradability, high surface-activity, antiadhesive properties, stability to temperatures, pH, salt concentrations and also antimicrobial activity. In this study, the antimicrobial activity of commercial rhamnolipid (CRL) and rhamnolipid produced in our laboratory (LabRL) were compared against three strains of *Bacillus cereus* (ATCC 11778, ATCC 10876 and ATCC 33018). LabRL was produced by *P. aeruginosa* LBI using soybean oil as carbon source and purified using a green chemistry approach without the use of organic solvents. A 1,000 μg mL^{-1} aqueous solutions of each rhamnolipid (CRL and LabRL) was then prepared. The minimum inhibitory concentration (MIC) was determined using the microbroth dilution technique and the minimum bactericidal concentration (MBC) was also evaluated. CRL and LabRL inhibited *B. cereus* ATCC 33018 showing MIC values of 62.5 μg mL^{-1} and bacteriostatic action at the range of concentrations tested. Both RL inhibited *B. cereus* ATCC 11778 showing the same MIC and MBC values (125 μg mL^{-1}). For *B. cereus* ATCC 10876 bactericidal effect was observed to LabRL at 125 μg mL^{-1} while CRL was bactericidal at 62.5 μg mL^{-1} concentration. The results of this study demonstrated that the LabRL showed similar antimicrobial activity against *B. cereus* comparatively to commercial rhamnolipid besides, RL are prospective agents to the control of this important food pathogen.

Keywords: rhamnolipid, *Bacillus cereus*, green chemistry, antimicrobial activity.

Development Agency: PUB (Programa Unificado de Bolsas da USP).