Antimicrobial study of biosurfactants from *Lactobacillus* strains against skin pathogens

Vecino, X.[a,b*], Rodríguez-López L[b], Cruz, J.M.[b], Moldes, A.B.[b], Rodrigues, L.R.[a]
[a]CEB-Centre of Biological Engineering, University of Minho, Campus de Gualtar. 4710-057 Braga, Portugal.
[b]Chemical Engineering Department, University of Vigo. Campus As Lagoas-Marcosende. 36310 Vigo, Spain.
*Corresponding author. Email: xanel.vecino@ceb.uminho.pt / xanel.vecino@uvigo.es

Human skin microflora is composed by resident, temporarily resident and transient microbial species. Therefore, gram-positive bacteria from the genera ***Propionibacterium***, ***Staphylococcus***, ***Micrococcus***, ***Corynebacterium*** and ***Acinetobacter*** are the majority microorganisms present in the resident microflora [1]. For instance, ***Staphylococcus epidermidis*** is the main constituent of skin microflora, which protects the human skin from infections; whereas ***Staphylococcus aureus*** is a common transient species, which causes skin infections [2]. Anti-bacterial preservatives such as triclosan, methylparaben or bronopol, among others, are currently used as ingredients in the skin and oral care cosmetic products. However, there is a growing demand for cosmetics free of synthetic preservatives [3]. In this sense, biosurfactants from lactic acid bacteria, which are generally recognized as safe by the American Food and Drug Administration, are natural compounds that exhibit antimicrobial activity and therefore, could be used as an alternative to the chemically synthetized preservatives. The aim of this study was to evaluate the antimicrobial activity of biosurfactants obtained from two different ***Lactobacillus*** strains (***L. pentosus and L. paracasei***) against skin pathogenic microorganisms. The biosurfactants were obtained according to the procedures described by Vecino et al. [4] and Gudiña et al. [5]. Afterwards, antimicrobial assays were carried out following the method proposed by Gudiña et al. [5]. The ***L. paracasei*** biosurfactant showed a considerable antimicrobial activity against ***S. aureus*** (around 83% at the highest concentration tested, 50 mg/mL), whereas the ***L. pentosus*** biosurfactant was less efficient exhibiting around 67% inhibition against the same organism. The same trend was observed against ***S. epidermidis***, the ***L. paracasei*** biosurfactant was more efficient (100% inhibition) than the ***L. pentosus*** one (40% inhibition). These results are in accordance with other studies reported in the literature. For instance, Madhu and Prapulla [6] showed that the ***L. plantarum*** biosurfactant was able to inhibit the growth of ***S. aureus***. Gudiña and collaborators [7] showed that ***L. agilis*** biosurfactants exhibit antimicrobial activity against ***S. aureus*** (around 20%) at low biosurfactant concentrations (5 mg/mL). The results gathered in this study clearly highlight the potential of these biosurfactants as preservative ingredients in cosmetic formulations.

ACKNOWLEDGMENTS

This study was supported by the Portuguese Foundation for Science and Technology (FCT) under the scope of the strategic funding of UID/BIO/04469/2013 unit, COMPETE 2020 (POCI-01-0145-FEDER-006684) and the project RECI/BBB-EBI/0179/2012 (FCOMP-01-0124-FEDER-027462), as well as Xanel Vecino post-doctoral grant (SFRH/BPD/101476/2014). Also, the authors acknowledge the financial support from Spanish Ministry of Economy and Competitiveness (FEDER funds under the project CTM2015-68904).

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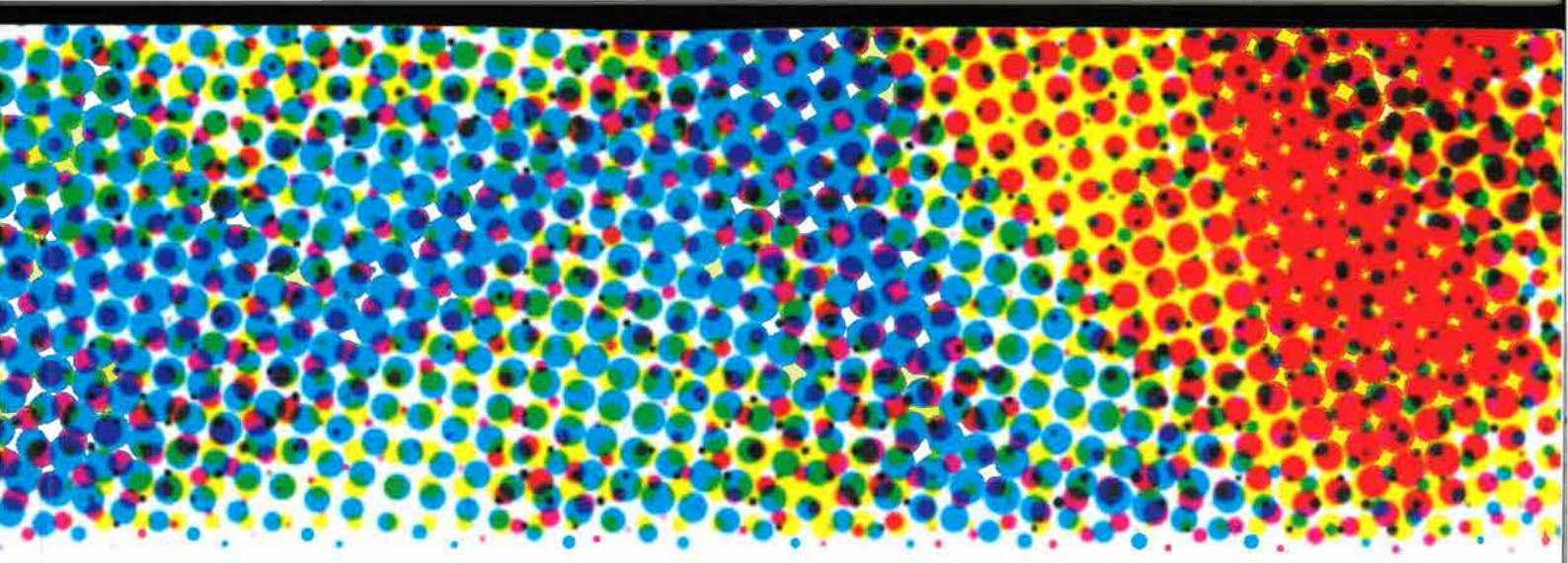

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