

BIOTRANSFORMATION OF LAPACHOL BY *STREPTOMYCES REGENSIS*

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Microbial transformation is an important tool to obtain of new compounds. Enzymes tend to be stereoselectives, making possible the conversion of many products in by-products with industrial value. This work aims to biotransformation of lapachol by *Streptomyces regensis* (DAUFPE3053) and monitoring by antimicrobial activity and HPLC analysis. The microorganism was cultivated in 250mL Erlenmeyer flasks containing 50mL of AF/MS liquid medium and incubated on a rotary shaker at 200rpm, $\pm 28^{\circ}\text{C}$. After 24 hours, lapachol solution in EtOH was added to the medium (final concentration of 500 $\mu\text{g}/\text{mL}$) and fermentation was continued for 48 hours. The fermentation broth was centrifuged and the supernatant extracted with EtOAc. The organic extract was evaporated to dryness under reduced pressure. Lapachol, β -lapachone and extract without lapachol were used as standard. Bioassay was performed by disk diffusion method towards the following microorganisms: *Staphylococcus aureus*, *Bacillus subtilis*, *Escherichia coli*, *Pseudomonas aeruginosa*, *Candida albicans* and *Candida krusei*. The chromatographic profile showed that *S. regensis* strain produced two different lapachol derivatives and one was identified as β -lapachone. The other derivative resulted in 11.296 retention time and the determination of its structure is necessary. The biotransformed extract was particularly active against bacteria, while lapachol and extract without lapachol were inactive. The β -lapachone was active only for Gram-positive bacteria. Bioconversion of lapachol showed oxidative processes of the C-2 and C-13 groups, allowing the production of β -lapachone and other derivatives with enhanced antimicrobial activities.

Keywords: Biotransformation, *Streptomyces*, Lapachol, Antimicrobial Activity