

EUCALYPTOL BIOTRANSFORMATION USING THE FUNGUS ASPERGILLUS NIGER

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Eucalyptol, 1,8-cineole, is the main compound in eucalyptus essential oil and has wide industrial applicability, in addition to its microbiological activities. However, its low chemical reactivity limits its direct use, making the synthesis of derivatives essential to expand its commercial potential and functionality (AZERAD, 2014). Biotransformations have been an alternative to organic synthesis, leading to direct and more sustainable products, and have been gaining more attention in recent years. In this context, the objective of this study was to test the methodology for hydroxylating eucalyptol to produce a derivative with a hydroxyl group in the 2 β or 3 β position, using the fungus *Aspergillus niger*, since traditional organic synthesis methods present challenges in producing them. The medium used for biotransformation was composed of: glucose 10 g L⁻¹, peptone 5.0 g L⁻¹, potassium phosphate bibasic 5.0 g L⁻¹, yeast extract 5.0 g L⁻¹ in 250 mL of distilled water and 100 μ L of eucalyptol PA. The fungi were incubated in this medium under agitation at 200 rpm and 30°C for 7 days (ARRUDA et al., 2018). During this period, daily aliquots were collected and subjected to liquid-liquid extraction with ethyl acetate PA to isolate the product of interest. The aliquots were characterized by Fourier transform infrared spectroscopy (FTIR), and on days 6 and 7, the appearance of a small peak in the 3500 cm⁻¹ range was demonstrated. This result indicates the presence of a hydroxyl group, a group present only in the desired product. Thus, the preliminary data obtained indicate a potential biohydroxylation of eucalyptol with the use of the fungus, however, complete validation requires new processes to confirm the data obtained. The authors thank the institutions CNPq, UTFPR, CA UTFPR TD, and BIOPARK for their support and financial backing for the development of the project.

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