

Biocatalysis and Biotransformation

Gas chromatographic profiling of the biocatalytic conversion of sclareol to ambradiol by *Hyphozyma roseoniger*

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Abstract

Hyphozyma roseoniger is a filamentous yeast used for its biocatalytic ability to convert sclareol, a plant diterpenoid to ambradiol, an intermediate to ambrafuran, which is a sought-after fixative in the perfume industry. Metabolite profiling is a suitable investigative tool to dissect the biochemical steps involved in the biocatalytic reaction by *H. roseoniger* from sclareol to ambradiol. *H. roseoniger* suspensions were grown in batch culture to simulate growth in a bioreactor over a 14-day period. Cells were harvested at stipulated days (phases of growth) using an ethyl acetate extraction procedure. The progress of the bioconversion was monitored using gas chromatography with flame ionisation detection (GC–FID) profiling. Here, decreasing concentrations of sclareol with concomitant increasing concentrations of ambradiol as product and with sclareolide as a putative intermediate, were recorded. While the presence of unidentified peaks were noted in the GC chromatograms, no previously unknown intermediates could be identified in the sequence of sclareol to sclareolide to ambradiol.