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BIOTRANSFORMATION OF 6]-GINGEROL BY *Curvularia asianensis*

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[6]-Gingerol, the main phenolic compound of *Zingiber officinale*, exhibits several biological activities, such as antioxidant, anti-inflammatory, antimicrobial, cytotoxic, and gastroprotective effects. The chemical modification of this natural metabolite can enhance its pharmacological properties and open new possibilities for therapeutic applications. In this context, biotransformation using whole intact cells offers advantages over classical chemical synthesis: higher selectivity (chemo-, regio-, and enantioselectivity), reactions under mild temperature and pressure conditions, a wide diversity of reaction targets, and the generation of high value-added products. Endophytic fungi, such as the genus *Curvularia*, display great enzymatic potential with applications in bioenergy, bioremediation, and the synthesis of bioactive compounds. However, studies involving *Curvularia asianensis* and this substrate are still scarce. Therefore, the aim of this study was to evaluate the potential of *C. asianensis* as a biocatalyst agent on (5S)-5-Hydroxy-1-(4-hydroxy-3-methoxyphenyl)-3-decanone ([6]-gingerol) transformation. The substrate was isolated from *Zingiber officinale* rhizomes by classical liquid chromatography. Biotransformation experiments were carried out (in triplicate) for 7, 8, and 9 days, in Potato-Dextrose broth medium, under agitation (112 rpm), and the substrate at 0.5 mg/mL. Reaction products were extracted with EtOAc and analyzed by HPLC and ^{1}H NMR. Chromatographic analyses indicated that [6]-gingerol was consumed and that different products were formed. The ^{1}H NMR spectrum revealed the occurrence of at least three oxireductive reactions. The disappearance of a singlet (δ 3.82 ppm), attributed to the methoxy group, indicates an O-demethylation reaction, while the disappearance of the quintuplet (δ 3.99 ppm), corresponding to the oxymethine hydrogen, suggests a reduction reaction and possible formation of paradol. The appearance of doublets at 1.14 and 0.99 ppm suggests an oxidation reaction in the aliphatic chain, specifically at the omega-1 carbon. Furthermore, new signals in the aromatic region suggest that the ring also underwent modifications. [6]-gingerol underwent different biotransformation reactions, mainly catalyzed by oxidoreductases.

Keywords: Biotransformation; Ginger; Gingerols, Endophytic fungi.