BIOTRANSFORMATION OF LIGNAN BY AN ACTINOMYCETE ISOLATED FROM CAATINGA

FERRARI, V.B.[1]; LIMA, L.M.S.[1], MARTINHO, V.[1], BARROS, C.A.[1], GRECCO, S.S.[2], LAGO, J.H.G.[2], MELO, I. S.[3], VASCONCELLOS, S. P.[1]

1. Universidade Federal de São Paulo (UNIFESP), Rua São Nicolau, 210 – Zip Code 09913-030, Diadema, SP, Brazil; 2. Universidade Federal do ABC (UFABC), Avenida dos Estados, 5001 - Zip Code 09210-580, Santo André, SP, Brazil; 3. Embrapa Meio Ambiente, Rodovia SP 340, KM 127,5, S/N – Zip Code 13820-000, Jaguariúna, SP, Brazil.

Caatinga, as an environment, presents some extreme conditions like high temperatures, salinity, nutrient scarcity, variations of pH and low oxygenation. It has been studied about its microbial diversity as well about the molecular and regulatory mechanisms involved in the population metabolism. Actinomycetes are recognized as an important source of different enzyme classes, including ligninocellulolytics. Structurally, lignin is basically composed by phenylpropanoids, named as lignans. These compounds have been increasingly described about their pharmacological properties, involving cytostatic, antitumor and antiparasitic activities. Thus, searching for new routes and sources of lignin / lignan biosynthesis, studies have revealed the isolation and characterization of phenylpropanoids from a plant called as *Nectandra leucanta*. In this context, this study aims to evaluate the bioconversion of lignans by actinomycetes isolated from the caatinga rhizosphere. In this sense, one bacterial isolated named as B6V2-14F was inoculated following biocatalytic reaction design: a) 1.0 g (wet weight) of the actinomycete, 0.1 g of lignan, and potassium phosphate buffer solution (K_2HPO_4/KH_2PO_4, 20 mL, pH 7.0, 0.1 M) as medium; b) 20 mL of the microbial supernatant added by 0.1 g of lignan. The reactions were incubated during 72 hours, at 30 ºC, in a rotary shaker at 120 rpm. They were monitored each 24 hours, by aliquots of 2 mL, analyzed by GC-MS (gas chromatography coupled to mass spectrometer). After the chromatographic analysis, it was possible to verify that the isolated B6V2-14F was able to promote the bioconversion of the lignan, added as sole microbial carbon source. It was possible to verify the majority formation of molecules corresponding to estrogenic steroids (estratriene and androstadiene). Another analysis to confirm the molecular structure of these products will be done, as a form to elucidate the reaction mechanism adopted by the bacterium to metabolize the lignan as substrate. In this sense, as a preliminary conclusion, it is possible to infer that the actinomycete B6V2-14F could find conditions to develop the bioconversion of a lignan compound, viabilizing its future use in pharmacological approaches.

KEYWORDS: *Nectandra leucanta*, bioconversion, lignan, GC-MS

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