Lactones 35. Metabolism of iodolactones with cyclohexane ring in *Absidia cylindrospora* culture.

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The metabolism of δ-iodo-γ-lactones containing cyclohexane ring with an increasing number of methyl substituents in Absidia cylindrospora was studied and seven metabolites were isolated as the products of biotransformations of these substrates. They were formed as the result of various dehalogenation pathways and four of them (hydroxylactones and epoxylactone) turned out to be new compounds. The conversion of substrates ranged from 60% to 90% and the highest conversion was observed for the iodolactone with an unsubstituted cyclohexane ring. The products were fully characterized by the spectroscopic methods and for the hydroxylactone with gem-dimethyl group at C-5 and hydroxylactone with trimethylcyclohexane system the crystal structures were obtained. The main products formed in the process of hydrolytic dehalogenation were δ-hydroxy-γ-lactones with the hydroxy group located cis in relation to lactone moiety. In case of lactone with 4,4,6-trimethylcyclohexane system the dehydrohalogenation followed by the epoxidation of double bond was also observed. One of the metabolites 4,5-epoxy-2,2,6-trimethyl-9-oxabicyclo[4.3.0]nonan-8-one was formed in the sequence of three reactions: hydroxylation at C-5, translactonization and intramolecular nucleophilic substitution of the iodine by the hydroxy group. Some of the isolated products of transformation of the iodolactone with trimethylcyclohexane system were obtained as the single enantiomers. The application of fungi studied to the dehalogenation of iodolactones could be a useful method in the production of new metabolites with oxygen-containing functional groups with antifeedant activity.

Słowa kluczowe

Absidia cylindrospora, Dehalogenation, Lactone, Halogenated compound, Whole-cells biotransformation