

Study of the biological and antioxidant activity of (Z)-2-(hydroxybenzylidene)-4,6-dihydroxy-7-methylbenzofuran-3(2H)-ones

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Abstract

Studies on the discovery of the chemical potential of 2,4,6-trihydroxytoluene, which has become an affordable reagent in organic synthesis after the development at IPCET SB RAS (Institute for problems of chemical and energetic technologies of the Siberian branch of the Russian academy of sciences) of technology for its preparation from 2,4,6-trinitrotoluene, we have been conducting systematic studies in recent years to obtain it basis of various multifunctional carbo- and heterocyclic compounds. The paper presents the results of a study of the biological and antioxidant activity of hydroxyderivatives of 2-benzylidenebenzofuran-3(2H)-ones obtained on the basis of 2,4,6-trihydroxytoluene. The compounds studied in the work showed high inhibitory activity against selected test strains (*Escherichia coli*, *Pseudomonas fluorescens*, *Staphylococcus aureus*, *Bacillus subtilis*). A study of the fungicidal activity of the synthesized compounds showed that the percentage of suppression of fungal strains (*Aspergillus niger*, *Aspergillus flavus*, *Penicillium chrysogenum*, *Ulocladium atrum* and *Penicillium funiculosum*) ranges from 0-20%. The antioxidant properties of the synthesized aurons were studied by cyclic voltammetry on a carbon-metal electrode. Ethanol solutions of rutin and quercetin were used as reference standards. The total antioxidant activity (Σ AOA) was estimated spectrophotometrically using a liquid-phase reaction with a chromophore radical, 2,2'-diphenyl-1-picrylhydrazyl (DPPH•), according to the degree of "radical uptake" (P). It was shown that all compounds have moderate antioxidant activity, which depends mainly on the number of hydroxyl groups and their position in the compound molecule. The work shows the value of 4,6-dihydroxy-7-methylbenzofuran-3(2H)-one as a building block for combinatorial chemistry.

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