Microbicidal Properties of 1-monoacylglycerol of 1-adamantane Carboxylic Acid

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The microbicidal effects of various lipids have been extensively studied in recent years. A number of free fatty acids and their 1-monoacylglycerols have a broad spectrum of microbicidal activity against bacteria and enveloped viruses in vitro.

The aim of this study was to evaluate antibacterial activity of new monoacylglycerol of 1-adamantane carboxylic acid. Both substances, monoacylglycerols and derivatives of adamantane, has been previously shown to be active against microorganisms and combination of them was prepared in order to obtain an effective antibacterial agent.

The antibacterial activity of monoacylglycerol of 1-adamantane carboxylic acid against Gram-positive (*Bacillus cereus, Bacillus subtilis, Enterococcus faecalis, Micrococcus luteus, Staphylococcus aureus*) and Gram-negative (*Escherichia coli, Citrobacter freundii, Pseudomonas aeruginosa, Salmonella enterica, Serratia marcescens*) bacteria was investigated. Monoacylglycerol of 1-adamantane carboxylic acid was prepared by the reaction of 1-adamantane carboxylic acid with glycidol (2,3-epoxy-1-propanol) in a solvent system.

Monoacylglycerol of 1-adamantane carboxylic acid at concentration of 1000 μg/ml was able to inhibit the growth of all tested Gram-positive and Gram-negative bacteria except for one Gram-negative species *S. enterica,* which proved to be resistant to MAG of 1-adamantane carboxylic acid even at the highest concentration tested.

Activity of MAG was pronounced especially against Gram-positive bacteria. In addition, combinations of MAG of 1-adamantane carboxylic acid with MAGs of caprylic and lauric acid were examined and synergistic effects were observed.

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