THE INFLUENCE OF NICOTINIC ACID DERIVATIVES ON THE SENSITIVITY OF LACTAMASE-PRODUCING *ESCHERICHIA COLI* TO CEFOTAXIME

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Extended-spectrum beta-lactamase-producing *Escherichia coli* are an increasingly significant cause of hospital and community acquired infections. One of the ways to overcome the resistance based on lactamase production is the combined use of antibiotics and β-lactamase inhibitors. Unfortunately the spectrum of existing inhibitors is rather limited. Thereby the screening of new classes of compounds for their potential inhibitory activity towards β-lactamase enzymes is a perspective direction of research.

The aim of this study was to estimate the influence of different combinations of cefotaxime and nicotinoyl hydrazones and their Ge(IV) and Sn(IV) complexes on the growth of TEM-producing *E. coli*. We evaluated the activity of 2-hydroxy-naphthaldehyde nicotinoyl hydrazone (I), 2-hydroxy-benzaldehyde nicotinoyl hydrazone (IV) and corresponding complexes (II, III, V, VI).

The test-strain was cultured in Mueller-Hinton broth in the presence of sub-MIC of cefotaxime and studied compounds using 96-well microtiter plates. The biomass accumulation was estimated by OD_{600}. The MIC of cefotaxime for the test-strain was defined as >256 μg/ml. The concentrations of cefotaxime ranged from 0,5 to 256 μg, the concentration of each hydrazone was 25 μM.

It has been detected the decrease of cefotaxime MIC to 16 μg/ml, 32 μg/ml and 64 μg/ml in the presence of compounds I, II and III respectively. Compounds IV-VI in combination with antibiotic didn't cause any significant changes in the test-strain biomass accumulation.

Thus, 2-hydroxy-naphthaldehyde nicotinoyl hydrazone and its metal complexes are perspective compounds for the future study of their potential ability to inhibit extended spectrum β-lactamases of Gram-negative bacteria.