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NEW 1, 4-NAPHTHOQUINONES: ANTIMICROBIAL AGENTS

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In the past decade, a problem of increasing number of bacterial pathogens presenting multidrug resistance to antibiotics has been observed. According to the World Health Organization multidrug-resistant bacteria are responsible for an estimated 25,000 deaths in Europe each year. The accumulation of antimicrobial agents in the environment and the exposure to these drugs provides the pressure for the diffuse of resistant pathogens. That is why the joint programming initiative on antimicrobial resistance supported by 18 European countries plus Canada recommended a promotion of research and development of novel antimicrobial strategies and antibacterial agents as the one of the key measures that should be adopted to fight the emergence and spread of antibiotic resistance worldwide. Regarding development of novel antimicrobial drugs, naphthoquinone derivatives are of wide interest because of their diverse functions and clinical applications. This system moiety is present in many natural compounds of wide biological action. The major objective of the present study was the synthesis and biological evaluation of a new series of 1, 4-naphthoquinone derivatives. The obtained compounds were tested against a panel of Gram-positive and Gram-negative bacteria strains as well as *Candida* strain. Additionally, we have verified the haemolytic properties of selected compounds against human erythrocytes. Each of examined naphthoquinone derivatives presented certain antimicrobial activity with predominant MIC values of 125-250 µg/mL. The most promising bacterial target of naphthoquinone derivatives presented the highest and selective potency towards *S.aureus* with MIC values between 7.8 and 62.5 µg/mL. The details of our studies, which describe the synthesis, antimicrobial activity, and proposition for the mechanism of an action of studied compounds, will be presented.

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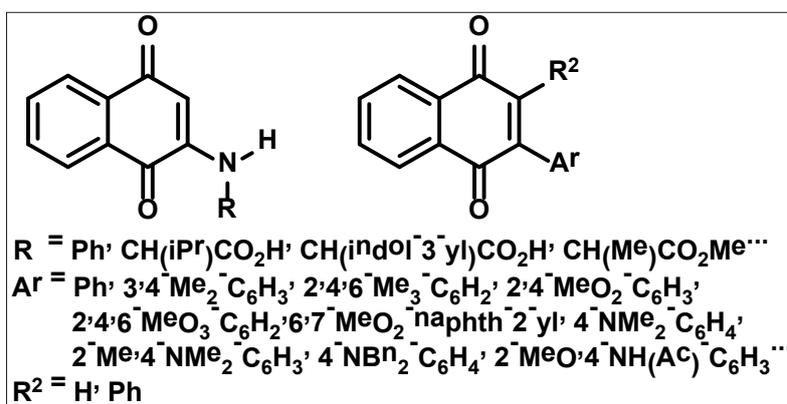


Figure. New 1, 4-naphthoquinone derivatives