

July 30-31, 2018  
Amsterdam, NetherlandsJ Org Inorg Chem 2018, Volume 4  
DOI: 10.21767/2472-1123-C3-009

# NEW ASPECTS OF SYNTHESIS AND MICROBIOLOGICAL APPLICATIONS OF $\beta$ -EWG FUNCTIONALIZED $\beta$ -NITROSTYRENE

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Conjugated nitroalkenes are valuable precursors in organic synthesis they have significant affinity to nucleophilic reagents as diazocompounds, nitrones, ylides, carbodienes, vinyl ethers etc., additionally; nitro group may be easily converted to many other functional groups. Subsequently it was known, that nitro group conjugated with  $sp^2$  carbon atom stimulate many forms of biological activity. Considering these facts we decided to check a series of (E)-2-aryl-1-cyano-1-nitroethenes as potential antibacterial and antifungal agents but without genotoxic properties. A homogenous series of  $\beta$ -EWG functionalized  $\beta$ -nitrostyrenes were synthesized and characterized by IR, UV,  $^1H$ -NMR and  $^{13}C$ -NMR spectra. Obtained compounds were screened *in vitro* against a panel of reference strains of bacteria and fungi and their cytotoxicity towards cultured human HepG2 and HaCaT cells was established. Antimicrobial results indicated that four of synthesized compounds exhibited significant antimicrobial activity against all tested reference bacteria and fungi belonging to yeasts with a specific and strong activity towards *B. subtilis* ATCC 6633. The details of our studies, which describe the synthesis, activity, and proposition for the mechanism of an action of studied compounds, will be presented.

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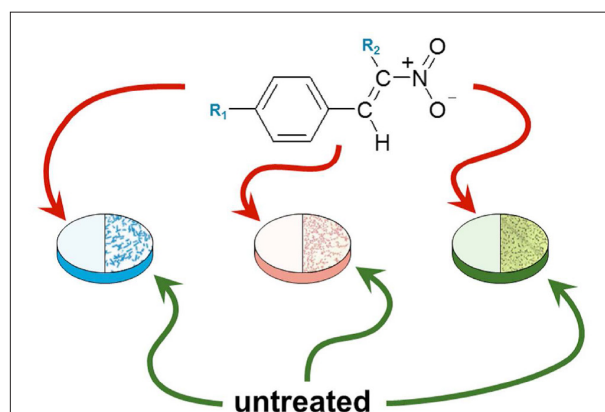


Figure. Synthesis of 4-AN and 4-AN-Ac