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The application of 1,3-dioxolane in synthesis of disubstituted 3,4-dihydroquinazolines, diarylmethane or methylenediamine

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Abstract

The interaction between 1,3-dioxolane with primary aromatic amine- sulfanilamide (streptocide), secondary aromatic amine-*N*-benzylaniline and also with amine of heterocyclic series – 4-aminopyridine. It is found that, sulfanilamide (streptocide), which has an electron withdrawing sulfonamide group in para position, reacts with 1,3-dioxolane in an atmosphere of benzol and trifluoroacetic acid producing 3-(4-sulfamoylphenyl)-3,4-dihydroquinazoline-6-sulphonamide, that is corresponding to the previous result obtained when 1,3-dioxolane reacts with *para*-nitroaniline (which also contains electron-withdrawing nitrogroup) resulting in 3-(*p*-nitrophenyl)-6-nitro-3,4-dihydroquinazoline. Under the same conditions the interaction between 1,3-dioxolane and *N*-benzylaniline results in producing 4,4′-bis(phenylmethyleneamino)diphenylmethane, which refers to a different class of compounds – diphenylmethane derivative. A primary amine of heterocyclic series 4-aminopyridine reacts with 1,3-dioxolane in the presence of concentrated hydrochloric acid producing *N,N*′-di-(4-pyridinyl)methylenediamine. Antimicrobic properties of received compounds were studied on museum potentially pathogenic microorganism strains: *Staphylococcusaureus* (strain 906), *Candid aalbicans* (ATCC 24433), in FSBI «Scientific Centre for Expert Evaluation of Medicinal Products» of the Ministry of Health of the Russian Federation. Only *N,N*′-di-(4-pyridyl)methylenediamine out of three investigated compounds showed microbiological activity. This compound inhibits growth of *Staphylococcus aureus* at concentration 62.5 μg/ml, culture death comes from the effect of concentration 125.0 μg/ml. The morphology of compounds was established according to mass spectrometry data, ^{1}H NMR spectroscopy, the structure of *N,N*′-di-(4-pyridyl)methylenediamine in the form of chloride was proved using X-ray structural analysis.

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