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Актуальні питання створення нових лікарських засобів : тези доповідей XXIII Міжнародної науково-практичної конференції молодих вчених та студентів (21 квіт. 2016 р.). В 2-х.т., Т.1. – Х. : Вид-во НФаУ, 2016. – 433 с.

Збірка містить матеріали науково-практичної конференції молодих вчених та студентів «Актуальні питання створення нових лікарських засобів». Матеріали згруповано за провідними напрямками науково-дослідної та навчальної роботи Національного фармацевтичного університету. Розглянуто теоретичні та практичні аспекти синтезу біологічно-активних сполук і створення на їх основі лікарських субстанцій; стандартизації ліків, фармацевтичного та хіміко-технологічного аналізу; вивчення рослинної сировини та створення фітопрепаратів; сучасної технології ліків та екстемпоральної рецептури; біотехнології у фармації; досягнень сучасної фармацевтичної мікробіології та імунології; доклінічних досліджень нових лікарських засобів; фармацевтичної опіки рецептурних та безрецептурних лікарських препаратів; доказової медицини; сучасної фармакотерапії, соціально-економічних досліджень у фармації, маркетингового менеджменту та фармакоекономіки на етапах створення, реалізації та використання лікарських засобів; управління якістю у галузі створення, виробництва і обігу лікарських засобів; інформаційниих технологій у фармації та медицині; основ педагогіки та психології; суспільствознавства; філології. Для широкого кола наукових і практичних працівників фармації та медицини.

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Topical issues of new drugs development : Abstracts of XXIII International Scientific And Practical Conference Of Young Scientists And Student (April 21, 2016). In 2 vol. Vol.1. – Kharkiv : Publishing Office NUPh, 2016. – 433 P.

Book of Abstracts includes materials of Scientific and Practical Conference of Young Scientists and Students «Actual questions of development of new drugs». Materials are groupped according to the main directions of scientific, research and educational work of the National University of Pharmacy. Teoretical and practical aspects of the synthesis of biologically active compounds and development of medicinal substances on their basis; standardization of drugs, pharmaceutical and chemical-technological analysis, the study of raw materials and herbal remedies development, modern drug technology and extemporal recipe; biotechnology in pharmacy, modern advances in pharmaceutical microbiology and immunology, clinical trials of new drugs, pharmaceutical care for prescription and OTC-drugs, evidence-based medicine, modern pharmacotherapy, socio-economic studies in pharmacy, marketing management and pharmacoeconomics during the development, implementation and use of drugs, quality management in development, production and traffi cking of drugs; information technologies in pharmacy and medicine; basics of pedagogy and psychology; social science; philology are presented. For a wide audience of scientists and pharmaceutaical and medicinal employees.

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SYNTHESIS AND DEHYDRATION OF N'-AROYLHYDRAZIDES OF (±)-CIS-3-DICHLOROMETHYL-1,2,2-TRIMETHYLCYCLOPENTANCARBOXYLIC ACID

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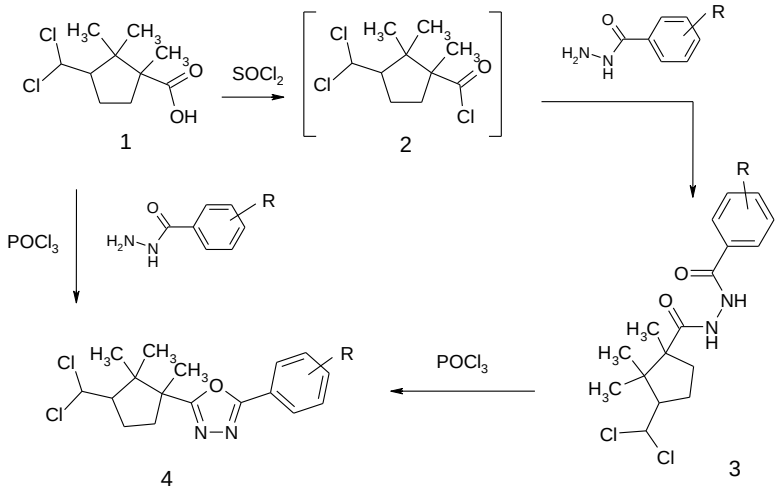
Introduction. (±)-Cis-3-dichloromethyl-1,2,2-trimethylcyclopentancarboxylic acid 1 (scheme) and (±)-camphoric acid have the same 1,2,2-trimethylcyclopentane moiety. The acid 1 was used by us in the synthesis of 1,3,4-oxadiazole derivatives with mentioned moiety, which could not be obtained from (±)-camphoric acid. Camphoric acid derivatives show hypoglycemic, anticonvulsant and diuretic activity and 1,3,4-oxadiazoles are known as compounds with antiproliferative, anticonvulsant, anti-inflammatory, antimicrobial and other activities.

Aim. The aim of work is elaboration method allowed to obtaine new potential biologically active substances which containe 1,3,4-oxadiazole and 1,2,2-trimethylcyclopentane pharmacophores.

Result and discussion. In previous studies the method of synthesis of (1R,3S),(1S,3R)-1,2,2-trimethyl-3-{[2-(R-benzoyl)hydrazinyl]-carbonyl}cyclopentanecarboxylic acids 3 has been developed. In this work we have extended the row of compounds 3 by using new hydrazides and carried out their dehydration. As a result, 2-[(1S,3R),(1R,3S)-3-(dichloromethyl)-1,2,2-trimethylcyclopentyl]-5-(R-phenyl)-1,3,4-oxadiazoles 4 have been obtained. It was managed to obtained oxadiazoles 4 by one-pot reaction from acid 1. The purity of synthesized compounds was proved by TLC, and their structure was confirmed by methods ^{1}NMR spectroscopy and elemental analysis.

Scheme



Conclusions. A one-pot method for the synthesis of oxadiazoles 4 from acid 1 has been developed.

SYNTHESIS AND DEHYDRATION OF N'-AROYLHYDRAZIDES OF (±)-CAMPHORIC ACID

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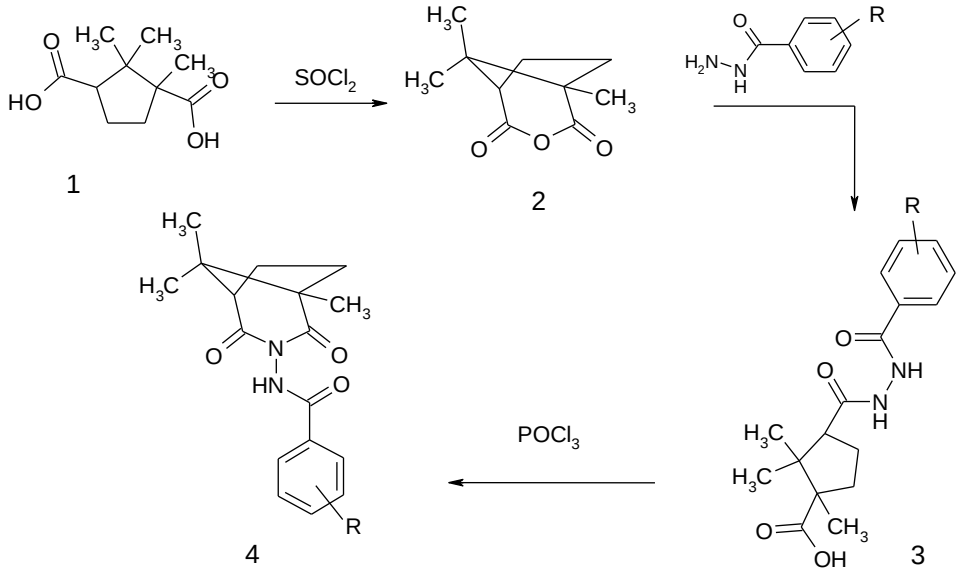
Introduction. Camphoric acid is the known compound which introduction in molecules of new substances reduces their toxicity and improves bioavailability. In previous studies derivatives of camphoric acid containing heterocyclic moiety such as quinazolone, thiophene and furan have been obtained. The results of pharmacological studies showed that they had diuretic, anticonvulsant and hypoglycemic activity.

Aim. With the purpose of further diversificasion of range heterocyclic derivatives of (±)-camphoric acid N'-aroylhydrazides 3 (scheme) have been synthesized as potential intermediate compounds in synthesis of 1,3,4-oxadiazoles.

Result and discussion. At the first stage (±)-camphoric anhydride 2 was obtained from (±)-camphoric acid 1. N'-aroylhydrazides 3 have been synthesized by interaction of (±)-camphoric anhydride 2 with hydrazides of aromatic acids. Dehydration of the obtained hydrazides 3 by $POCl_3$ ended up with closure of imide cycle and formation of N-[(1S,5R),(1R,5S)-1,8,8-trimethyl-2,4-dioxo-3-azabicyclo[3.2.1]oct-3-yl]benzamides 4. N'-aroylhydrazides 3 and benzamides 4 are colourless crystalline substances with the precise melting points. The purity of synthesized compounds was proved by TLC, and their structure was confirmed by methods ^{1}NMR spectroscopy and elemental analysis.

Scheme



Conclusions. The series of N'-aroylhydrazides 3 have been synthesized. Dehydration of hydrazides 3 by $POCl_3$ does not lead to formation of the 1,3,4-oxadiazoles but end up with formation of benzamides 4.

MEDICINE FOR RESPIRATORY SYNCYTIAL VIRUS: GREAT CHALLENGE IN MEDICINAL CHEMISTRY

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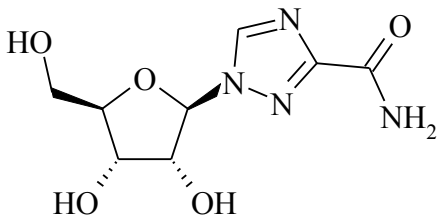
Introduction. Respiratory syncytial virus (RSV) is the leading cause of acute lower respiratory-tract infections and admissions to hospital worldwide, especially in infants, the elderly and immunocompromised, with high mortality rates due to RSV-related complications. Around 66 million people are infected worldwide, and it cause 199 000 deaths each year. It is the only agent of the three major organisms that causes death from respiratory tract infections—RSV, Streptococcus pneumoniae, and Haemophilus influenzae—for which no vaccine is available.

Aim. This work is aimed to analysis of the current state of research and development of medicines for treatment of infection caused by RSV.

Materials and methods. Scientific data (journal articles, patents, reports so on) reviewing and analysis.

Results and discussion. Despite the burden on the healthcare system in the developed world and the high mortality rates in certain high-risk groups, there is no treatment for RSV infection. Ribavirin (**1**), broad-spectrum antiviral agent, was approved by the US Food and Drug Administration but is rarely used (high cost, lack of demonstrated benefit in decreasing hospitalization or mortality) and only for the children with severe RSV disease. Immunoprophylaxis against RSV infections with palivizumab (Synaggis), a monoclonal antibody, is only moderately effective and reserved for the highest risk preterm infants and those with conditions such as chronic lung disease and congenital heart disease due to the high cost of treatment.



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Some recent progress in the development of anti-RSV agents has been made, and small molecule fusion inhibitors have been found among different azaheterocycles (e.g., benzimidazoles, benzodiazepines, pyrimidines, quinolines, thiazoles etc.).

RSV has already been prioritised for control and vaccine development by global and national health organizations for more than 20 years. Successful immunisation against RSV was predicted, in 1994, to be achieved within 10 years. But, unfortunately, it has still not been done.

Conclusions. Thus, significant unmet medical need exists for the development of a convenient, safe and effective antiviral therapy for RSV infection.