Conclusion. From this work it is cleared that Georgian bentonite clay preparation - TA can be used as a substrate for polymer/clay composites; synthesized complex presents promising characteristics that allows to consider it as a potential drug delivery system. Further studies are on-going for the preparation of TA hybrid material with different polymers.

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DEVELOPMENT OF ANTIMICROBIAL AGENTS IN THE SERIES OF AMIDES OF 4-OXO-5-METHYLTHIENO[2,3-*d*]PYRIMIDINE-6-CARBOXYLIC ACID

Vlasov S.V., Vlasov V.S., Severina H.I., Plys S.V., Georgiyants V.A.
National University of Pharmacy

Introduction. Infectious diseases are among the most dangerous in the world and cause the death of a large number of people every year. Also, complications due to the addition of bacterial infections in postoperative conditions and in cases of reduced immunity are a big problem for doctors. According to US statistics, in 2019, antibiotics were prescribed 650 times per 1,000 patient visits in the under-20 age group, and 804 times in the over-20 age group. In the last decade, an increasing number of publications have appeared on the antimicrobial activity of thieno[2,3-*d*]pyrimidine derivatives, and therefore we turned our attention to thieno[2,3-*d*]pyrimidine-6-carboxylic acid derivatives.

Aim of research. Considering the high antimicrobial activity of 4-oxo-5-methylthieno[2,3-*d*]pyrimidine-6-carboxylic acid itself, which is most likely an inhibitor of N-acetyltransferases of bacterial sugars, we decided to use this compound for further modification and synthesis on its based on benzylamides.

Material and methods. The synthesis of the target molecules has been performed according to organic chemistry synthetic methods. The structure of the substances was assumed by NMR ^{1}H, ^{13}C, liquid-chromatography-MS. Antimicrobial activity was studied using the agar well diffusion method.

Results. A well-known compound, the synthesis of which is widely presented in the literature, is ethyl 5-methyl-4-oxo-3,4-dihydrothieno[2,3-*d*]pyrimidine-6-carboxylic acid, so the research of conditions for the synthesis of amides based on it became important in the planning of the synthetic scheme. The optimal conditions are proposed in which 4-oxo-5-methylthieno[2,3-*d*]pyrimidine-6-carboxylic acid is obtained by alkaline hydrolysis at the first stage. At the second stage, amidation of the obtained acid with a high yield was carried out with benzylamines using 1,1'-carbonyldiimidazole as a peptide coupling reagent. As a result, bezilamides of 4-oxo-5-methylthieno[2,3-*d*]pyrimidine-6-carboxylic acid were obtained.

Conclusions. The study of the antimicrobial activity of *N*-benzylamides of 4-oxo-5-methylthieno[2,3-*d*]pyrimidine-6-carboxylic acid by the agar well diffusion method showed their activity against *Staphylococcus aureus* and *Bacillus subtilis* strains. Compounds with an unsubstituted benzene ring or light substituents such as methyl ($-CH_3$) or methoxyl ($-OCH_3$) groups in the para-position of the benzene nucleus turned out to be more active against both strains.

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АСТАКСАНТИН: НАЙСИЛЬНІШИЙ АНТИОКСИДАНТ В БОРОТЬБІ З ОКИСЛЮВАЛЬНИМ СТРЕСОМ

Авад А.А.Дж.А., Король В.В.
Національний фармацевтичний університет, м. Харків, Україна

Вступ: Всі живі організми живуть і отримують енергію за рахунок окисно-відновних реакцій, що протікають в їх клітинах. Основою нормальної життєдіяльності клітин є баланс між акцепторами та донорами електронів. На жаль, умови життя сучасної людини не сприяють підтримці цієї крихкої рівноваги: руйнування озонового шару, забруднення навколишнього середовища, постійні стреси, прийом медикаментів, наявність шкідливих звичок, незбалансоване харчування і багато інших факторів призводять до того, що руйнується внутрішньоклітинна багаторівнева система захисту від шкідливої дії окисників. Через накопичення активних форм кисню в живих клітинах відбувається пошкодження їх найважливіших компонентів – регуляторних білків, ліпідів клітинної мембрани та ДНК, тому окислювальний стрес відіграє ключову роль у патогенезі понад 200 захворювань і є однією з головних причин передчасного старіння організму.