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ЭКСПЕРТНОЕ ЗАКЛЮЧЕНИЕ О ВОЗМОЖНОСТИ ОПУБЛИКОВАНИЯ

Руководитель-эксперт Федерального государственного бюджетного учреждения науки Института элементоорганических соединений им. А.Н.Несмеянова Российской академии наук, рассмотрев *статью* L. Kayukova, A. Vologzhanina, P. Dorovatovskii, G. Baitursynova, E. Yergaliyeva, A. Kurmangaliyeva, Z. Shulgau, S. Adekenov, Zh. Shaimerdenova, K. Akatan «**Reaction Products of β-Aminopropioamidoximes Nitrobenzenesulfochlorination: Linear and Rearranged to Spiropyrazolinium Salts with Antidiabetic Activity**», подготовленную для печати в журнале *Molecules*, подтверждает, что в материале *не содержатся* сведения, предусмотренные Постановлением Правительства РФ №1233 от 30.11.1994г. и на публикацию материала *не следует* получать разрешение *Минобрнауки и/или Президиума РАН*

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Reaction Products of β-Aminopropioamidoximes Nitrobenzenesulfochlorination: Linear and Rearranged to Spiropyrazolinium Salts with Antidiabetic Activity

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Abstract: Nitrobenzenesulfochlorination of β-aminopropioamidoximes leads to a set of products depending on the structure of the initial interacting substances and reaction conditions. Amidoximes, functionalized at the terminal C atom with six-membered *N*-heterocycles (piperidine, morpholine, thiomorpholine and phenylpiperazine), as a result of the spontaneous intramolecular heterocyclization of the intermediate reaction product of an S_N2 substitution of a hydrogen atom in the oxime group of the amidoxime fragment by a nitrobenzenesulfonyl group, produce spiropyrazolinium *ortho*- or *para*-nitrobenzenesulfonates. An exception is *ortho*-nitrobenzenesulfochlorination of β-(thiomorpholin-1-yl)propioamidoxime, which is regioselective at room temperature, producing two spiropyrazolinium salts (*ortho*-nitrobezenesulfonate and chloride), and regiospecific at the boiling point of the solvent, when only chloride is formed. The *para*-Nitrobezenesulfochlorination of β-(benzimidazol-1-yl)propioamidoxime, due to the reduced nucleophilicity of the aromatic β-amine nitrogen atom, is regiospecific at both temperatures, and produces the *O-para*-nitrobenzenesulfochlorination product. The antidiabetic screening of the new nitrobezenesulfochlorination amidoximes found promising samples with in vitro α-glucosidase activity higher than the reference drug acarbose. ^{1}H-NMR spectroscopy and X-ray analysis revealed the slow inversion of six-membered heterocycles, and experimentally confirmed the presence of an unfavorable stereoisomer with an axial N–N bond in the pyrazolinium heterocycle.

Keywords: β-aminopropioamidoximes; nitrobezenesulfochlorination; spiropyrazolinium salts; X-ray diffraction

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1. Introduction

Heterocycles with potential bioactive properties are of great interest, first of all, for medical chemists working in the field of heterocyclic compounds synthesis. Among the new drugs approved by the FDA in 2021, almost 50% are substances with nitrogen-containing heterocycles [1]. Pyrazoline derivatives, as prominent representatives of nitrogen-containing heterocycles, became the subject of a report on the world market of diphenylpyrazolines from Market Strides (global aggregator and publisher of market intelligence research

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Data Availability Statement: The data presented in this study are available in this article.

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Conflicts of Interest: The authors declare no conflict of interest.

Sample Availability: Samples of the compounds **6–14** are available from the authors.

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