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R.V. Alikulov
Termez State University
researcher
91-576-96-43
rv_aliqulov@rambler.ru

D.M. Atamuratova
Termez State University
researcher

Y.Sh. Bozorov
Termez State University
researcher

B.T. Haitov
Termez State University
researcher

SYNTHESIS OF A NEW DERIVATIVE OF KOLCHAMINE WITH PROPARGYL ALCOHOL

Abstract: *A derivative of colchamine with propargyl alcohol was synthesized [11]. The structure of the synthesized compound was confirmed by the data of IR and PMR spectra. In the IR spectra of compounds with an ester group, absorption bands of the carbonyl group (1735-1730 cm-1) appear, and in the spectra of the hydroxyl group of carbinols (3400-3450 cm-1).*

Key words: *colhamin, propargyl alcohol, IR spectroscopy.*
Language: *English*
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Introduction

In the world, alkaloids - plant bases, having completely diverse chemical structures and physiological activity, constitute one huge class of organic compounds. An in-depth study of their structure and physiological activity has made an enormous contribution to the development of theoretical organic chemistry and medical practice. At the same time, interest in their research does not wane, bringing new results to science and practice. Establishing the features of their structure is of particular importance.

In the world of medicines created on the basis of alkaloids of the tropolone groups, they are widely used in the practice of medicine and organic synthesis. The group of alkaloids includes tropolones, the producers of which are colchicum (Colchicum L.) and related plants of the Liliaceae family. The structural diversity of their alkaloids, important physiological properties and the finding of their new representatives, a number of research works have been carried out.

In our country, in order to develop the chemical industry, effective methods of extracting drugs from plants that meet modern requirements are being developed, special attention was paid to the isolation of effective methods of herbal medicinal substances, certain successes were achieved in the creation of drugs. The measures taken in this direction have led to

certain results, including extensive measures are being taken to isolate physiologically active substances from medicinal plants, to synthesize their low-toxic products, as well as to study the composition, structure and properties of synthesized compounds, to determine their dependence physiological activity from structure. In connection with the growth and development of various sectors of the economy, the need for new classes of compounds, especially those containing a carbon-carbon triple bond, is increasing. Therefore, chemical products based on acetylene and its derivatives have become the object of extensive research in synthetic chemistry in recent years. Particular interest in this problem is explained by the high reactivity and great prospects for the practical use of such synthetic products, on the basis of which it is possible to obtain physiologically active substances [1, 2], metal corrosion inhibitors [3], and so on.

The main starting compound for carrying out the synthesis, Kolkhamin, was isolated from the Colchicum luteum baker plant growing in the steppes of the Surkhandarin region of the Republic of Uzbekistan [4].

It is noticed that the introduction of groups containing an acetylene bond into a drug molecule significantly reduces their toxicity. In this work, derivatives of colchamine with 2-methyl-5-ethynylpyridine have been synthesized.

Experimental part

Synthesis of colchamine derivatives with 2-methyl-5-ethynylpyridine. A weighed portion of 1.0 g of colchamine was dissolved in 17 ml of freshly distilled and dried dioxane, and 0.12 g of paraform, 0.01 g of hydroquinone and 0.03 g of copper monochloride were added to the resulting solution. Then an equimolecular amount of 2-methyl-5-ethynylpyridine was added. The contents in the flask were thoroughly mixed [5-7].

The condensation reaction of colhamine with acetylenic compounds was carried out according to Mannich, in equimolecular ratios of the reagents.

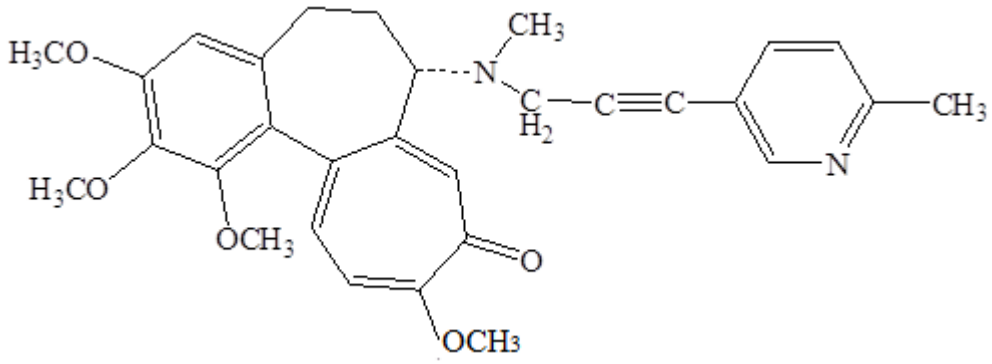
The resulting substances are light yellow powder. It was found by thin layer chromatography that the synthesis products have similar Rf values. At the same time, in terms of chromatographic mobility, they strongly differ from the initial colchamine, having high Rf values.

Due to the alkyl (and not acyl) nature of the substituents introduced into the amino group, the derivatives obtained retain, to some extent, basicity (especially with the pyridine ring), which makes it difficult to separate the colchamine impurity from the reaction products. Therefore, for this purpose, they resorted to the method of chromatography on aluminum oxide (eluents - mixtures of ether-acetone, acetone and acetone-methanol).

Results and its discussion. The structure of the synthesized compounds was confirmed by the data of IR and PMR spectroscopy. In the IR spectra of compounds with an ester group, absorption bands of the carbonyl group (1735-1730 cm-1) appear, and in the spectra of carbinols of the hydroxyl group (3400-3450 cm-1).

The colhamine fragment of the synthesized compounds in the PMR spectra does not differ significantly: the signals of the N-methyl group appear at 2.20-2.22 ppm, methoxyl groups at 3.56-3.60 (at C-1) and 3.82- 3.85 ppm. (at C-2, C-3 C-10), proton H-4 - at 6.44-6.51 ppm, H-8 - 7.90-7.96 ppm, H- 11 - 6.68-6.75 ppm. and H-12 7.17-7.22 ppm.

The resulting compound was examined by spectral methods and confirmed to have the following structure.



Picture 1.

Conclusions.

1. A new derivative of colchamine with propargyl alcohol has been synthesized

2. The composition and structure of the synthesized compound have been confirmed by PMR and IR spectroscopy.

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