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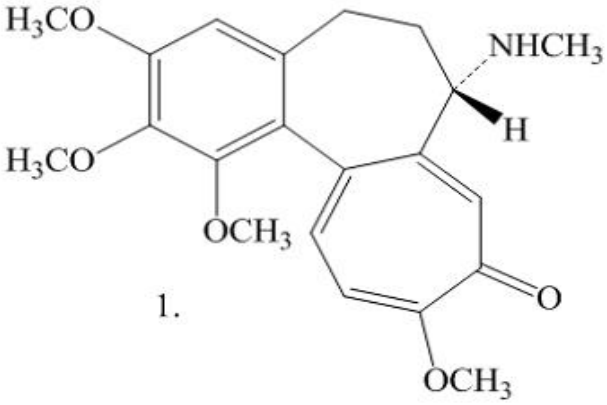
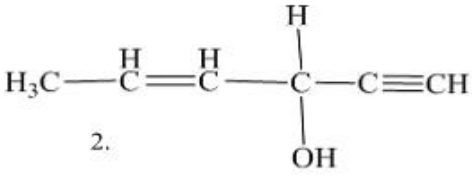
# SYNTHESIS OF A NEW COLCHAMINE DERIVATIVE WITH PROPENYLETHYNYLCARBINOLAM

**ABSTRACT:**Synthesized 4-(colchamino N/propenyl-1-butyn-2) carbinol. The structures of the synthesized compounds are confirmed by the data of IR and PMR spectra.
**Keywords:** Colchamine, propenylethynylcarbinolam 4-(colchamino N / propenyl-1-butyn-2) carbinol.

**Introduction.** It is known that the introduction of groups containing an acetylene bond into the molecule of medicinal substances significantly reduces their toxicity. Due to the fact that such work in the field of colchicine alkaloids has not been carried out previously, we synthesized derivatives of colchamine (1) with propenylethynylcarbinol (2) [3]. Initial compounds for the synthesis of acetylene derivatives of colchamine (1):



1.



2.

**Experimental part.** a) Derivatives of colchamine with propenylethynylcarbinol. A sample of 1.0 g of colchamine was dissolved in 17 ml of dried and freshly distilled dioxane and 0.12 g of paraform, 0.01 g of hydroquinone and 0.03 g of zinc chloride were added to the solution. After that, an equimolecular amount of propenylethynylcarbinol was added to the solution and the contents of the flask were mixed well.

**Table 1.**
**Reaction conditions of propenylethynylcarbinol with colchamine**

| № | Reagent | Estimated amount of reagent | The amount of reagent taken | Product yield (%) |
|---|---|---|---|---|
| 1. | Colhamin | 0,78 | 1,0 | 95 |

The reaction mixture was heated on a glycerol bath with a reflux condenser at 80-100° for 6-8 hours. The end of the reaction was determined by thin-layer chromatography of the reaction mixture.

After the reaction was practically complete, the substances insoluble in dioxane were separated by filtration and the solvent (dioxane) was distilled off on a rotary unit. The residue was dissolved in 20-30 ml of chloroform, the resulting very dark chloroform solution was extracted three times with 20 ml of 5% acetic acid.

The acetic acid extract contains unreacted colchamine, which was isolated by alkalizing the acidic solution with ammonia and extracting with chloroform.

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The chloroform solution of the reaction product, after separating the initial colchamine, was dried over anhydrous sodium sulfate, the sulfate was filtered and the filtrate was passed through a small layer (5-7 g) of aluminum oxide. The dark extract became much lighter. The solvent was distilled off and the reaction product was dried in a vacuum desiccator.

Results and discussion. The condensation reaction of colchamine with acetylene compounds was carried out according to Mannich [4], in equimolecular ratios of reagents:

The main starting compound - colchamine (1) for the performed syntheses was isolated from Colchicum luteum baker growing in the Surkhandarya region.

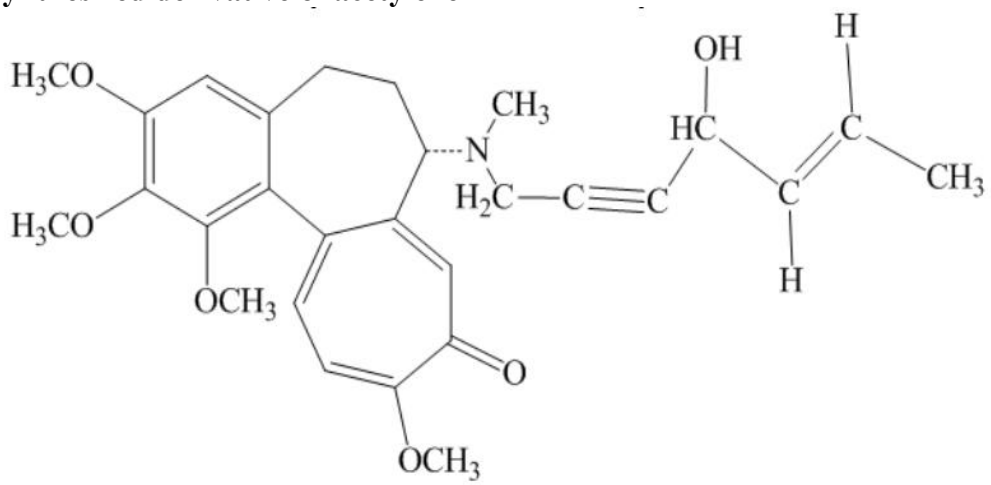
As a result, we synthesized; 4-(colchamine N/propenyl-1-butyne-2) carbinol (3) (Table 2) [5].

The obtained compounds are light yellow powders with close Rf values. At the same time, in terms of chromatographic mobility, they differ greatly from the starting colchamine, having a high Rf value.

A characteristic feature of all acetylene derivatives is the presence in their PMR spectra of a two-proton doublet from the bridging N-$CH_2$- group, which appears in the region of 3.35-3.38 ppm. The bridging $OCH_3$ group present in compounds 4-5 forms a narrow two-proton doublet in the region of 4.53-4.70 ppm. The structure of the synthesized compound is confirmed by IR and PMR spectra. In the IR spectra of compounds with an ester group (3-4), absorption bands of the carbonyl group (1735-1730 $cm^{-1}$) appear.

The colchamine fragments of the synthesized compounds do not differ significantly in the PMR spectra: the signals of the N-methyl group appear at 2.20-2.22 ppm, methoxyl groups - 3.66-3.70 (at C-1) and 3.72-3.75 ppm (at C-2, C-3 C-10), proton H-4 - at 6.44-6.51 ppm, H-8 - 7.80-7.86 ppm, H-11 - 6.58-6.65 ppm and H-12 - 7.17-7.22 ppm.

**Synthesized derivative of acetylene**




4-(colhamino N/propenyl-1-butyne-2) carbinol (3).

IR spectrum: 1210, 1140, 1730, 2600, 3000, 3410, 3540 $sm^{-1}$.

PMR spectrum: 1,60, 1,85 ($CH_2$), 2,05 ($CH_3$), 2,26 ($NCH_3$), 3,58; 3,85 x 2, 3,83 (3H x 4, cc, 4$OCH_3$), 5,16 (OH), 6,48 (H-4), 6,94 (H-11), 7,24 (H-12 и H-8)

**Conclusions**

Synthesized new derivative of colchamine with propenylethynylcarbinol. The synthesized compound is confirmed by NMR and IR spectral data. The work describes the synthesis of a new derivative of colchamine with propenylethynylcarbinol - 4-(colchamine N / propenyl-1-butyne-2)

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carbinol. To confirm the structure of the obtained compounds, IR and NMR spectroscopy data were used. The synthesis process includes a condensation reaction of colchamine with acetylene-containing compounds, carried out according to the Mannich method. As a result, substances with reduced toxicity were synthesized, which is confirmed by the introduction of an acetylene bond into the molecule. The study of the obtained compounds showed characteristic spectral parameters confirming their structure.

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