

RESEARCH ON ALKALOIDS OF COLCHICUM KESSELRINGII

Atamuratova Dilorom Mamatmuminovna

Termez State University

19011, Termez, Barkamol Avlod Street 43

E-mail: tel: +99891 576-74-49

Abstract: In plants belonging to the *Colchicum* genus, along with tropolone alkaloids such as colchamine and colchicine, isoquinoline alkaloids are also found. The extraction and study of alkaloids from these plants is of great importance in the development of organic chemistry and medical practice. The diverse structures, important physiological properties, and the search for new alkaloids in these plants make this research highly relevant.

Keywords: Savrinjon (*Colchicum*), colchamine, phenol, homoproaporphine, cancer.

For the first time, O.S. Sodiqov and M.K. Yusupov studied the qualitative and quantitative composition of alkaloids in *Colchicum Kesselringii* grown in Central Asia. They isolated tropolone alkaloids, their photochemical isomers, and several new compounds lacking a tropolone ring structure from the plant. Shantavi and others, however, isolated only tropolone alkaloids and their photochemical isomers.

The alkaloid colchamine found in *Colchicum* plants is used in medicine to treat skin cancer and chronic leukemia, while colchicine is applied in the treatment of gout, podagra, and some neuralgias. Quantitatively, colchamine ranks second after colchicine in these plants and is also known in medicine as "omain." In recent years, colchamine has also been used in the treatment of esophageal and gastric cancer.

Research has shown that the alkaloid content and phenol-based fractions of plants of the same species grown in different regions vary. In *Colchicum* grown in Surkhandarya, lutein predominates, while in Syrdarya, kesselringine is the main phenol-based alkaloid. In Syrdarya-grown *Colchicum*, the hydroxyl group in kesselringine's ring has an axial orientation, whereas in *Colchicum* collected from the Chirchiq valley, the hydroxyl group has an equatorial orientation, forming homoproaporphine bases. Therefore, to obtain complete quantitative and qualitative data on the alkaloid composition, plants from different regions were studied.

We collected the aerial parts of *Colchicum Kesselringii* plants growing in Kumkurgan district of Surkhandarya region and Hissor district of the Republic of Tajikistan and separated them into fractions using the extraction method.

Alkaloids extracted from 6.4 kg of *Colchicum* collected in Kumkurgan (Surkhandarya):

- Neutral alkaloids: 13.44 g (0.21%)
- Phenolic alkaloids: 1.92 g (0.03%)
- Acidic alkaloids: 3.2 g (0.05%)
- Alkali-insoluble bases: 17.92 g (0.28%)
- Phenol-based alkaloids: 10.88 g (0.17%)
- Total alkaloids: 47.36 g (0.74%)

Alkaloids extracted from 4.1 kg of *Colchicum* collected in Hissor (Tajikistan):

- Neutral alkaloids: 8.20 g (0.20%)
- Phenolic alkaloids: 1.23 g (0.03%)
- Acidic alkaloids: 2.05 g (0.05%)

- Alkali-insoluble bases: 11.07 g (0.27%)
- Phenol-based alkaloids: 6.56 g (0.16%)
- Total alkaloids: 29.11 g (0.71%)

The study of *Colchicum kesselringii* plants growing in Kumkurgan (Surkhandarya) and Hissor (Tajikistan) showed that they differ mainly in the fraction of strong bases. In the Surkhandarya plants, the strong bases mainly consist of lutein and its analogues, while in the Hissor plants, kesselringine and its analogues predominate.

References

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