

*Thematic course: gem-Dichlorcyclopropane substituted nitrogen-containing heterocycles. Part 1.*

## Synthesis of **gem-dichlorcyclopropylmethyltiosubstituted derivative benzimidazoles, benzoxazoles, 4,6-dimethylpyrimidines and 1,2,4-triazoles**

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### Abstract

Reactions 1-halogenmethyl-1-*R*<sup>1</sup>-2,2-dichloro-3,3-*R*<sup>2</sup>-cyclopropanes with potassium salts of 2-mercaptopbenzimidazole, -benzoxazole, -4,6-dimethylpyrimidine and 5-mercaptop-3-methyl(phenyl)-1,2,4-triazoles proceed with the retaining of three-membered ring and result to obtaining the corresponding *gem*-dichlorocyclopropylmethyltiosubstituted benzimidazole derivatives, benzoxazole, 4,6-dimethylpyrimidine and 3-methyl(phenyl)-1,2,4-triazoles. We studied their spectral and pesticidal properties. The obtained compounds showed middle fungicidal, low insecticide-acaricidal and herbicidal activity.

### References

- [1] General organic chemistry: in 12 vols. ed. by D. Barton, W. D. Ollis. Vol. 8. Nitrogen-containing heterocycles. Ed. by P. G. Samsa. Per. from English. Ed. To. Kochetkova. M.: Chemistry. **1985**. 752p. (russian)
- [2] T.V. Mandelstam, E.M. Baricheva, N.N. Labels, R.R. Kostikov. On the interaction of allergological with haloform and alkali under conditions of interphase catalysis. *Journal of Organic Chemistry*. **1980**. Vol.16. No.12. P.2513-2518. (russian)
- [3] Pat. USA. 4149874 71/18, (A 01 N 9/20, G 07 C 103/127). Cyclopropylmethylmethoxy Substituted anilides and their use as herbicides. Felix, R. A. Appl. 21.06.77; Publ. 17.04.79. Rehim. 1979. 21O437II.
- [4] A.F. Pozharskii, V.A. Anisimova, E.B. Tsupak. Practical work on heterocyclic chemistry. *Izd-vo Growth. Univ.* **1988**. 157p.
- [5] A.S. USSR 765267, CL. 07 D 405/14 C 07 D 249/12. 1,4-Diglycidyl-1,2,4-triazoline-5 as a monomer for epoxy resins and compositions. V.N. Artemov, O.P. Shvaika, A.N. Sorokina, N. And. Short, L.B. Kan. Appl. 07.07.78; Publ. 25.09.80. Rehim. **1981**. 10H175II.
- [6] O.A. Kolyamshin, Yu.N. Mitrasov, V.V. Kormachev. Gem-dichlorocyclopropylsubstituted hydantoins. *Journal of General Chemistry*. **1995**. Vol.65. No.4. P.672-675. (russian)