

POSTER PRESENTATIONS

SYNTHESIS OF BENDAMUSTINE ANALOGUES BASED ON 5-AMINO-2-PROPIONYLAMINO BENZIMIDAZOLE

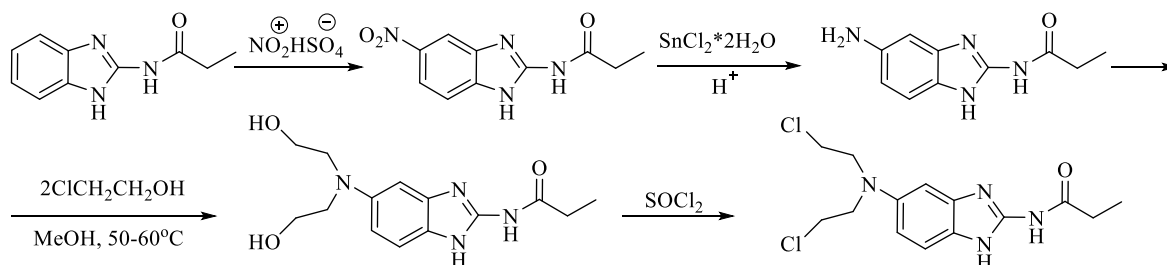
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Cancer remains one of the leading causes of death worldwide. According to experts' estimates, the number of new cancer cases is expected to increase by approximately 70% over the next twenty years.

Bendamustine, a bis(2-chloroethyl)amine derivative, is one of the most important antineoplastic cytostatic agents with an alkylating mechanism of action. This drug was first synthesized in Germany in 1963. Subsequently, its manufacturing process was described and patented [1].

Initially, 2-propylaminobenzimidazole was subjected to a nitration reaction to obtain bendamustine analogues [2]. The resulting compound was then reduced in the presence of tin (II) chloride. Subsequently, reactions of 5-amino-2-propionylaminobenzimidazole with ethylene chlorohydrin were carried out. The molar ratio of the reactants was maintained at 1:2.2. The experiment was performed in a reactor equipped with a mechanical stirrer at 50–60°C using methanol as the solvent. After completion of the reaction, the resulting compound was poured into ice water and extracted with chloroform up to four times while the progress of the process was monitored by thin-layer chromatography (TLC). The newly obtained compound, N-(5-(bis(2-hydroxyethyl)amino)-1H-benzo[d]imidazol-2-yl)propionamide, was subjected to chlorination with thionyl chloride under various reaction conditions.



The objective of this study is to reduce the number of synthetic steps involved in the preparation of bendamustine analogues and to obtain compounds with enhanced biological activity.

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References:

1. W. Ozegowski, D. Krebs. J Prakt Chem. 1963. 20. P. 178–186.
2. S. Saidov et al. Journal of Science and Mathematics Letters. 2026. Vol 14. P. 39–46.