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2. Title
   DNA Adducts, Etiological Consideration of Lung Cancer

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4. Summary

In order to elucidate DNA adducts and the mutations which cause lung cancer, the analysis system of DNA adducts has been constructing. The extensive library of standard compounds is the key to accurate analysis. In this study, the chemicals which are difficult to collect, have been synthesized to expand standard compound library.

Some target compounds are unstable substances, moreover, multi-step synthesis and complicated operations are often required to obtain them. Therefore, their efficient synthetic routes were constructed by combining feasible methods retrieved from the database. The low-yield processes involved were solved by improving the conditions and purification method. As an alternative supply method, a high-purity solution of the standard compound was prepared. Since the adductomics method involves preparing standard solutions to charge them to LC/MS, this method was applied to synthetic targets that are unstable and difficult to isolate.

Alkylation to nucleobases using α-amino acids as the alkyl source was investigated. The alkylation proceeds through the coupling of the nucleobase with the generated diazo compound. The fundamental results of nitrosation, diazotization, and coupling reactions of amino acids and nucleobases, are required to explore their potential as a method to obtain alkylation adducts.