Title	Biological and chemical properties of alkanediazotates as active species of N-nitroso compounds
Sub Title	
Author	鵜川, さと子(Ukawa, Satoko) 望月, 正隆(Mochizuki, Masataka)
Publisher	共立薬科大学
Publication year	1990
Jtitle	共立薬科大学研究年報 (The annual report of the Kyoritsu College of Pharmacy). No.35 (1990.) ,p.60- 60
JaLC DOI	
Abstract	
Notes	抄録
Genre	Technical Report
URL	https://koara.lib.keio.ac.jp/xoonips/modules/xoonips/detail.php?koara_id=AN00062898-00000035-0060

Biological and Chemical Properties of Alkanediazotates as Active Species of *N*-Nitroso Compounds*

Satoko UKAWA and Masataka MOCHIZUKI

鵜川さと子，望月正隆

N-Nitrosodialkylamines are detected in foods or drugs, and considered to be a potent human carcinogens. They are metabolically activated by α-hydroxylation, and α-hydroxy nitrosamines decompose to alkanediazohydroxides, which give the ultimate alkylating species, alkyldiazonium ions. Alkanediazohydroxides exist as a pair of geometric isomers, (*E*) and (*Z*). These two isomers may have different properties, and the distribution of geometric isomers seems to have some influence on the carcinogenicity of *N*-nitrosodialkylamines. To study the biological and chemical properties of (*E*)- and (*Z*)-alkanediazohydroxides, their isolable potassium salts, (E)- and (*Z*)-potassium alkanediazotates (alkyl=Me, Et, Pr, Bu) are investigated.

We examined the mutagenicity and chemical reactivity of these isomeric alkanediazotates. The mutagenicity was assayed in three microbial strains, *Salmonella typhimurium* TA1535, *Escherichia coli* WP2 and WP2 *hcr*$^-$. As controls, we used a series of *N*-nitroso-*N*-alkylureas, which decompose to the alkanediazohydroxides nonenzymatically. The effect of changing alkyl groups on the mutagenic potency was similar in the (*E*)-and (*Z*)-isomers, *N*-nitroso-*N*-alkylureas and α-hydroxy nitrosamines. As one of the chemical reactivities, the alkylating activity towards nicotinamide was tested in an aqueous solution. When the alkyl chain-length increased, the alkylating activity of diazotates and nitrosoureas decreased; Me > Et > Pr=Bu. These results in mutagenicity and alkylating activity was partly explained by the difference in the stability of compounds used. As we compared the mutagenic potency in *Salmonella typhimurium* TA1535 and the alkylating activity, the relative mutagenicity of compounds with different alkyl groups was linearly related to the alkylating activity.

In conclusions, alkanediazohydroxides are the active alkylating species of *N*-nitroso compounds, and the relative mutagenicity is determined by their alkylating activity and chemical stability.

* 本報告は *IARC Scientific Publications*, No. **105**, 433—435 (1990) に発表.