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Directly-acting Mutagens Formed from *N*-Nitroso-*N*-(formylmethyl)alkylamines*

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Directly-acting mutagens formed from *N*-nitroso-*N*-(formylmethyl)alkylamines (I) were isolated and identified as *N*-nitroso-*N*-alkyl-1-hydroxyimino-2-oxoethylamines (II). Their structures were elucidated on the basis of nuclear magnetic resonance spectra and confirmed by leading to their crystalline 2,4-dinitrophenylhydrazone. II (alkyl=ethyl and *n*-butyl) were strongly mutagenic to *Salmonella typhimurium* TA 1535 and *Escherichia coli* WP 2 *hcr*⁻ without metabolic activation, while II with a *tert*-butyl group was not mutagenic. The formation of II from I is considered to proceed by the nitrosation of I, indicating a possible involvement of a formylmethyl metabolite in the carcinogenesis of nitrosamines with a 2-hydroxyethyl group.

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