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Mutagenicity of α-Hydroxy *N*-Nitrosamines in V 79 Chinese Hamster Cells*

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Carcinogenic and mutagenic *N*-nitrosodialkylamines are metabolically activated through α-hydroxylation. The synthesis, chemical properties, and microbial mutagenicity of α-hydroxy *N*-nitrosamines have been reported previously. Potent mutagenicity of four *N*-nitroso-*N*-(hydroxymethyl)-alkylamines (alkyl=methyl, ethyl, propyl, and butyl) was demonstrated in the present study in V 79 Chinese hamster cells, ouabain resistance being used as an indicator. All the compounds were strong mutagens in the absence of metabolic activation systems. The mutagenic and cytotoxic potencies correlated well with each other, and depended on the alkyl group, decreasing in potency in the following order : methyl>ethyl>propyl=butyl. Their alkylating reactivity was measured by alkylation of thiophenol, and a good linear relationship was observed between the mutagenic and cytotoxic potencies and their alkylating reactivity. The mutagenic and cytotoxic potencies of the α-hydroxy *N*-nitrosamines in V 79 cells were well correlated with those of α-acetoxy and α-hydroperoxy *N*-nitrosamines with respect to the effect of alkyl group. The results obtained here supported further that α-hydroxy *N*-nitrosamine is the active species in the metabolic activation of *N*-nitrosodialkylamine.

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