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Mutagenicity of Alkylhydrazine Oxalates in Salmonella typhimurium TA 100 and TA 102 Demonstrated by Modifying the Growth Conditions of the Bacteria

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Alkylhydrazines are important carcinogens. However, they show generally only weak mutagenicity and the activities reported from different laboratories are contradictory. We have developed a sensitive method to detect the mutagenicity of alkylhydrazines. The method is based on a modified preculturing procedure in the Ames test, the emphasis in the modification being a change in the growth period of tester strains. The optimal growth periods were found to be 11 h in Salmonella typhimurium TA 100 and 5 h in Salmonella We tested the mutagenic activity of 12 alkylhydrazines; typhimurium TA 102. 1,2-dimethylhydrazine, 1,2-diethylhydrazine, 1,2-dipropylhydrazine, 1,2-dibutylhydrazine, 1,1-dimethylhydrazine, 1,1-diethylhydrazine, 1,1-dipropylhydrazine, 1,1-dibutylhydrazine, methylhydrazine, ethylhydrazine, propylhydrazine, and butylhydrazine. All 12 alkylhydrazines were clearly mutagenic in Salmonella typhimurium TA 102, and 10 hydrazines were mutagenic in Salmonella typhimurium TA 100, both in the absence of S9 mix. mutagenicity was inhibited by the addition of S9 mix or bovine serum albumin. This suggests deactivation of the mutagens by proteins.

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