P-70

MUTAGENIC ACTIVITY OF QAS DERIVATIVES OF GLYCOPYRANOSIDES

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A series of quaternary aminium salts (QAS) have been synthesized in reaction of n-bromoalkyl 2',3',4',6'-tetra-*O*-acetyl-β-d-glycopyranoside and n-bromoalkyl 2',3',4',6'-tetra-*O*-acetyl-α-d-glycopyranoside with tertiary amines: pyridine and trimethylamine. In order to examine genotoxic potential of newly synthesized *N*-[n-(d-glycopyranosyloxy)alkyl]aminium salts, we used two different bacterial mutagenicity assays. First of them, known as an Ames test, employs histidine dependent *Salmonella typhimurium* strains and is recognized as the most commonly used short-term bacterial mutagenicity assay, not only for scientific purposes, but also applied in analysis of newly introduced chemicals by regulatory agencies. In the second assay marine *Vibrio harveyi* A16 dim mutant is used. Upon the addiction of a genotoxic compound a particular fraction of bacteria regain bioluminescence ability, which serves as a measure of a mutagenic effect. One of analyzed compounds, *N*-[11-(2',3',4',6'-tetra-*O*-acetyl-α-d-glucopyranosyloxy)undecyl]-*N*,*N*,*N*-trimethylaminium bromide exhibited pronounced mutagenic activity in the Ames test. For two other compounds, *N*-[11-(β-d-glucopyranosyloxy)undecyl]pyridinium bromide and *N*-[2-(2',3',4',6'-tetra-*O*-acetyl-β-d-galactopyranosyloxy)ethyl]pyridinium bromide, a weak mutagenic effect in the Ames test was observed. Remaining compounds were assessed as non-mutagenic. On the other hand, *V. harveyi* bioluminescence assay demonstrated a pronounced mutagenic effect in a broad range of compounds concentrations, which suggest higher sensitivity of *V. harveyi* test in comparison to the Ames test. These findings demonstrate that *N*-[n-(d-glycopyranosyloxy)alkyl]aminium salts can be genotoxic and reveal the need for their further profound testing, especially with test systems which can provide high sensitivity, such as *V. harveyi* bioluminescence assay.

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