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[Lab. of Public Health]

### **Mutagenicity of the components of ozonated humic substances.**

HIROAKI MATSUDA, YOUKI OSE, HISAMITSU NAGASE,  
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Eight components of humic substances were ozonated. Mutagenic activity was found on TA 100 and 98 with and without S9 mix for all ozonated components. Ozonated products of *p*-hydroxybenzaldehyde were separated into five fractions by silica gel chromatography and each fraction was subjected to Ames assay. Mutagenic activity was found in the chloroform and chloroform-acetone (1: 1) fractions. The compounds in these fractions were identified and aldehydes such as formaldehyde, acetaldehyde, glyoxal, glyoxylic acid and methylglyoxal were found to be mutagenic.

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### **Mutagenicity of ozonation and chlorination products from *p*-hydroxybenzaldehyde.**

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*p*-Hydroxybenzaldehyde, a component of soil humic substances, was ozonated and chlorinated. The ether extract and water residue were subjected to Ames assay. Strong mutagenic activity was observed in water residue and the mutagenic compounds were not adsorbed on non-ionic resin CSP 800 and anion exchange resin CHPA 25. The mutagenic activity was reduced as the added chlorine was increased. Ether extract was analyzed by gas chromatography-mass spectrometry (GC-MS) and chloral, 1,3-dichloro-2-propanone, 1,2,3-trichloro-1-propene, tetrachloroethylene and 1,1,1,3,3-pentachloro-2-propanone were identified as mutagenic products.

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[Lab. of Public Health]

### **Evaluation of the SOS Chromotest for the Detection of Antimutagens.**

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The SOS chromotest was applied for the detection of antimutagens. To raise SOS induction, the bacteria were treated with mutagens, UV, 4-nitroquinoline N-oxide (4NQO), N-methyl-N'-nitrosoguanidine (MNNG) or benzo [a] pyrene (B [a] p). The inhibitory effects of L-ascorbic acid, glutathione, vanillin, 5-fluorouracil (5-FU), 5-chlorouracil (5-CU), cobaltous chloride, sodium selenite and sodium arsenite, which are known as antimutagens, were investigated with their addition either simultaneously or post treatment time. It became clear that the SOS chromotest was very useful for the detection of antimutagens.