

LYCOPENE AND VITAMIN E PROTECT AGAINST DNA DAMAGE IN MAMMALIAN
CELLS EXPOSED TO ACETALDEHYDE

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Air pollution is a major environmental risk for human health. The mutagenicity of polar organic extracts collected from São Paulo city was recently investigated. The most mutagenic fractions contained ketones, aldehydes and quinolines. Higher levels of acetaldehyde and formaldehyde were found in the atmosphere of São Paulo. It is known that these aldehydes induce oxidative stress and cellular death. We have investigated lipid peroxidation and DNA damage in IMR-90 cells after 3 h treatment with acetaldehyde (500 μ M to 10 mM). Acetaldehyde caused lipid peroxidation in a dose dependent manner as monitored by the quantification of malondialdehyde (MDA) using HPLC coupled to fluorescence detection. A significant amount of DNA strand breaks, measured by the Comet assay, was observed in cells treated with the aldehyde compared to control. Pre incubation with 20 μ M lycopene and vitamin E for 2 h resulted in a 35 % decrease in lipid peroxidation and a protection against DNA strand breaks. Conclusively, we confirmed that acetaldehyde may be important causative of the mutagenicity of São Paulo's atmosphere extracts, and that antioxidants may reduce the oxidative damage caused by aldehyde exposition.

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