Abstract

Objective. To assess the genotoxic activity of N-nitroso diethylamine (NDEA), maleic hydrazide (MH), and ethyl methane sulfonate (EMS) using two systems: the comet assay on nuclei from Tradescantia, and the pink mutation test on Tradescantia staminal hairs (clone 4430). Material and Methods. Tradescantia cups was obtained from Laboratorio de Citogenética y Mutagénesis del Centro de Ciencias de la Atmósfera de la Universidad Nacional Autónoma de México and treated with: N-nitroso diethylamine (NDEA) at 1, 5, 10 mM, maleic hydrazide (MH) at 1, 5, 10 mM and ethyl methane sulfonate (EMS) at 15, 30 and 45 mM; and used in both pink mutation assay and comet assay using cellular nuclei from Tradescantia staminal hairs. The observation of staminal hair was realized along eight days (6-14) after treatment), flowers produced day 14 after treatment were utilized done according to Underbrink. In previous reports on plants, were comet assay was used, breaking cellular wall and separating by centrifugation gradient are necessary. Here, nuclei from staminal hairs were obtained by squashing the cells (is not necessary to utilize to break special procedure cellular wall), collected using a nylon mesh of 80Mm and next the comet assay was applied. Students T test was the statistical test used for analyzing the comet assay data. Results. Both assays showed a great sensitivity to the studied mutagens. A relationship between the dose-pink event and the dose-tail length was evident. Even though the Tradescantia mutation assay is a sensitive test with MH and EMS, low doses of NDEA were not able to induce a significant increase in the pink event frequencies; however, the comet assay was able to detect the mutagenic effect of NDEA at the same dose. Thus, it is clear that the comet assay is highly sensitive to the lowest dose of chemical mutagens. Conclusions. The comet assay on nuclei from Tradescantia staminal hairs is a useful tool to monitor genotoxic agents; it is simple, highly sensitive, and faster than the pink mutation test. The English version of this paper is available too at: http://www.insp.mx/salud/index.html

Keywords

Key words: environmental mutagens; genotoxicity test; Comet assay; Tradescantia; Mexico