

P-21

The Study of Genotoxicity and Antimutagenicity of Cinnamaldehyde (II) : The Mutagenicity on the Mouse Lymphoma L5178Y TK+/- Assay (MLA)

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Cinnamaldehyde(CAL) was subjected to mouse lymphoma L5178Y tk+/- assay(MLA). This study was performed using the microwell method by J. Clements both in the presence and absence of metabolic activation system. The statistical analysis was performed using the MUTANT V2.34 program(Hazelton) as recommended by the UKEMS guidelines.

From the result of the cytotoxicity range-finding test, the range of concentration to be applied was determined as 0.2 to 5.6 $\mu\text{g/ml}$ in the absence of S9 mixture and as 0.6 to 16.7 $\mu\text{g/ml}$ in the presence of S9 mixture.

In the absence of S9 mixture, mutation frequencies(MF) of CAL showed dose-dependent significance as $3.2 \sim 6.5 \times 10^{-4}$. In this condition, MFs of spontaneous mutation and of 10 $\mu\text{g/ml}$ methylemthansulfonate (MMS) as a positive control were 1.8×10^{-4} and 14.9×10^{-4} , respectively. In the presence of metabolic activation, MFs at the concentrations of 0.6, 1.9, 5.6, and 16.7 $\mu\text{g/ml}$ were 1.4, 2.0, 1.9, and 11.7×10^{-4} , respectively. MFs of negative control and positive control treated with 3 $\mu\text{g/ml}$ cyclophosphamide(CP) were 1.1×10^{-4} and 3.9×10^{-4} , respectively. In the presence of S9 mixture, the highest concentration, 16.7 $\mu\text{g/ml}$, also showed significance at 5 % level.

These results suggest that CAL induced TFT-resistant mutants in L5178Y tk+/- mouse lymphoma cells.

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