

Thesis Title : Induction of Sister Chromatid Exchanges
by Clastogenic Effect of Palmyrah Palm
(Borassus flabellifer)

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Abstract

Palmyrah (Borassus flabellifer) flour is consumed by people in certain tropical countries. Its extracts were tested for the induction of sister chromatid exchanges (SCEs) in human peripheral lymphocytes by BrdU-giemsa method in order to evaluate the genotoxic effects. The results indicate that these extracts induced SCEs in a dose-dependent way. The average SCE frequencies per cell were 7.51, 8.25, 8.76, 9.16 and 10.13 when treated at the concentrations of 2, 4, 8, 10 and 12 mg/ml medium of palmyrah extracts respectively. The average SCE frequencies per cell of negative control and mitomycin C (positive control) were 5.98 and 34.63 respectively. There was statistically significant difference in SCE frequencies between control and cells exposed to various concentration of palmyrah extracts

($p < 0.025 - 0.0005$). Except batches no.4 and 5 at concentration 2 mg/ml medium, the extracts induced no significant increase of SCE frequencies in lymphocyte cultures from female and male individuals respectively ($p > 0.05$). There was as well significant difference in SCE frequencies between the first three batches and the other two batches of palmyrah flour.

The number of SCEs per cell did not differ significantly between male and female ($p > 0.05$).

The frequency of SCE generally increased when chromosome length increased, SCEs at centromeric region were observed but not related to the different concentration of the extracts.

This investigation added an information to the other biological effects of palmyrah flour already described i.e. induction of malignant lymphomas, immunosuppression and neurotoxicity in rats, in vitro clastogenicity on human lymphocyte and mutagenic effect on Ames test.