

The Genotoxic Effect of Coal Fly Ash of Thermal Power Plant on Raphanus sativus L. (Radish)

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Abstract : The effect of coal fly ash treatment on the chromosomes of Raphanus sativus L. was investigated. The seeds of Raphanus sativus L. were placed in petri dishes in three replicates and allowed to germinate for five days in different concentration of coal fly ash solution. The root was treated with the diluted, semidiluted, and concentrated solution of fly ash while the control group had distilled water. The total aberration were examined. The mitotic index was calculated and the results were statically evaluated by the analysis of variance 5% significant level. The mitotic index decreased as the concentration increased. The highest mitotic index value was diluted fly ash solution while the least was concentrated fly ash treatment. The results show the most frequent chromosomal abnormalities observed included: chromatid bridge, c-mitosis, and stickiness. Concentrated fly ash solution is much more genotoxic than semidiluted fly ash solution, as it induced more aberrations having percentage abnormalities for the highest concentration tested. Increased fly ash pollution can lead to some irreversible cytogenetic effect in plants. The study is an attempt to corroborate the toxic effect of coal fly ash of thermal power plant on the chromosome of plants. These results will be useful in environmental monitoring of the cytotoxicity of coal fly ash.

Keywords : coal fly-ash, genotoxic, cytogenetic, mitotic index, Raphanus sativus L.

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