

Type of presentation: Poster

IT-4-P-3064 An approach to study antigenotoxicity assay in plants using Confocal Laser Scannig Microscopy and Scanning Electron Microscopy.

Walia A.¹, Sharma M.², Kumar K.¹, Bhardwaj R.², Thukral A. K.²

¹Centre for Emerging Life Sciences, Guru Nanak Dev University, Amritsar, Punjab, India,

²Department of Botanical & Environmental Sciences, Guru Nanak Dev University, Amritsar, Punjab, India

Email of the presenting author: adwalia@gmail.com

A new and rapid procedure has been followed using Confocal Laser Scannig Microscopy and Scanning Electron Microscopy for use in the determination of genotoxicity and antigenotoxicity of compounds in plants.

In the present study the above two techniques were used to analyse the genotoxicity and antigenotoxicity effects of compounds on plant system. Certain fluorescent dyes are more reliable indicators of cell viability than the commonly used colored dyes. DNA intercalating dyes like propidium iodide are known to pass only through the membranes of dead or dying cells. Staining with propidium iodide (PI) can be used for the determination of non viable cells. In this study we have evaluated the genotoxic effect of Cr(VI) at different concentrations along with ascorbic acid as a reducing agent in the plant roots. The results showed that the metal ions have a significant effect on the viability of root cells in a dose dependent manner. Also the reducing agent has its effect on reversing the negative effect of these metal ions.

The metal ions are not only genotoxic to plants but they also affect their root growth. To study the pattern of root growth using the same compounds we have scanned the roots of these plants using Scanning electron microscope. The results have shown significant changes in the features of the root tips in different binary combinations of Cr(VI) and ascorbic acid. The study suggests that these techniques can be effectively used for the study of physiological toxicity and antigenotoxicity assays in plants.

Acknowledgement: We are thankful to University Grants Commission for providing financial assistance to Dr. A.K. Thukral to conduct this work .