

Research Article**Induced Mutagenesis Mediated by Gamma Irradiation and Ethyl Methane Sulphonate Alters the Metabolite Profile and Ultra-Microscopic Changes Between Resistant Lines and Wild Parents Against Alternaria Leaf Blight in Jasmine****Sanchita Ghosh¹, M Ganga² and S Nakkeeran³**

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Abstract

The present investigation was aimed to develop Alternaria leaf blight resistant lines through induced mutagenesis in *Jasminum grandiflorum* cvs Co-1 Pitchi and White Pitchi with EMS and gamma rays respectively. The lines developed from Co-1 Pitchi after exposure to 10 Gy gamma irradiation had the minimum PDI of 13.80 per cent compared to the untreated control (62.83%). Similarly, exposure of the terminal cuttings of White Pitchi with 25 mM EMS had the minimum PDI of 16.83 per cent Alternaria leaf blight compared to untreated control (55.98%). Analysis of total phenol content indicated that susceptible wild parent of cv Co-1 Pitchi had the lowest (3.63 mg g⁻¹) total phenol content, whereas resistant lines of Co-1 Pitchi developed with 10 Gy gamma rays had 23.14 per cent higher phenol content than susceptible wild parent. Resistant lines of White Pitchi developed through exposure of EMS had 22.22 per cent higher phenol content than susceptible parent. Metabolite profiling indicated that the maximum number of antifungal compounds was observed in the resistant lines of *J. grandiflorum* cv Co-1 Pitchi as against susceptible wild parent. SEM image of stem tissues of susceptible wild type and resistant lines of both Co-1 Pitchi and White Pitchi indicated that susceptible wild parent was characterised with rough and disintegrated cellular layers and disrupted vascular channels whereas SEM images of stem tissues of resistant lines of cvs Co-1 Pitchi and White Pitchi (CP-LBR-1 and WP-LBR-2 respectively) appeared to have comparatively intact vascular channels with regular arrangement of cells and intact cell boundaries.

Key words: Alternaria leaf blight, gamma rays, EMS, GC-MS, jasmine, metabolites, SEM image

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