

# 2<sup>nd</sup> International Conference on Agricultural & Horticultural Sciences

Radisson Blu Plaza Hotel, Hyderabad, India February 03-05, 2014

## EMS induced genetic diversity in *P. corylifolia* during chemical mutagenesis and their characterization using molecular markers

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Induced mutagenesis is a useful technique in plant breeding used to improve traits without disrupting the original genetic constitution of the crop. Nucleotide pool imbalance can have severe consequences on DNA metabolism by modulating chromosomes by DNA precursors raises the possibility that DNA changes are responsible for the induction of chromosomal aberrations (CA) and mutations in plant cells.

The present study tries to elucidate the effects of different doses (50 to 125 ppm) of ethyl methane sulphonate (EMS) on the cytomorphological, biochemical and molecular characters of *Psoralea corylifolia*. Treated populations from lower doses significantly improved some characters and higher concentrations pronounced depressing effects in terms of growth parameters and yield. Dose dependent increases in the chromosomal abnormalities were recorded and the main chromosomal anomalies were univalents, multivalents, laggards, precocious separation, stickiness, unequal separation of chromosomes, micronuclei, and cytotoxicity. A total of 7 mutant phenotypes were recorded under field conditions in M2. Among the 7 identified putative mutants, tall mutants were the most abundant followed by bushy, dwarf and small seeded and high yielding. In addition, interestingly other mutants such as short root, albino, and anther less mutants were also observed at a lower frequency. Twenty ISSR primers screened two ISSR primers which produced clear and reproducible bands were selected for amplifying 7 selected variant DNA samples (amplifying three times with each primer). A total of 56 fragments were amplified by two primers, with an average of 6.29 bands per primer and the band size ranged from 53 bp to 830 bp, and 36 polymorphic bands were found. EMS at lower concentrations acts as a best mutagen and at higher concentrations acts as a toxicant in *Psoralea corylifolia*, lower concentrations can be effectively incorporated for raising viable mutants in this medicinally useful plant. The study shows in depth the induction of variability in *Psoralea corylifolia*, by ethyl methane sulphonate for conservation strategies with respect to enhanced phytomedicine production.

### Biography

Towseef Mohsin Bhat is a Ph.D. Research Scholar in the Department of Botany Aligarh Muslim University Aligarh. He is also a UGC -BSR fellow in the same department. He has published various papers in various international journals of repute.

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