

Plant cell culture: Various potentialities.

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Editorial

Plant biotechnology includes subjects like plant tissue culture, molecular biology and genetic engineering is a rapidly evolving area which needs fast dissemination of knowledge. There are internet and thousands of journals for communicating results, the spread of information is still often found inadequate. In this context, it gives me an immense pleasure to launch and write for a new journal "Advances in Cell Science and Tissue Culture". The name itself suggests of research involving culture of cell and tissues for human welfare. The meristematic tissue is utilized not only in programming and reprogramming of cells it also helps in understanding the development of individuals from single somatic cell. The vegetative cells are totipotent and the 'embryos' are produced from somatic cells. Since its first report, the *in vitro* embryogenesis is considered to be an important area of both fundamental and applied applications. This journal sincerely considers the progress of latest development on this very topic covering a broad range of plant models. Various regulatory molecules/mechanisms including plant growth regulators, kinases, receptor molecules, cytokines acting as signaling molecule in controlling growth and differentiation also requires to be documented in a structured way. It is fact that tissue culture - based mass propagation revitalized orchid and other ornamental industry, its potentiality is not fully realized in several other groups of plants like forest and fruit trees. Some major contributions and breakthrough are therefore absolutely necessary for future agriculture uses. Beside clonal propagation, haploid breeding, *in vitro* induction and selection of mutant, protoplast culture and fusion, synthetic seed production, pathogen free plants, synthesis and accumulation of secondary compounds are some of the fertile areas of research need utmost attention. Considerable progress has been made in developing transgenic protocols but its applications are restricted to a limited numbers of crops. The added traits in cultivated plants may play a direct role in crop improvement for sustaining agriculture. In

industrial front, suspension culture in bioreactors capable of synthesizing active compounds is another important area needs major overhaul. These secondary products of industrial applications include antimicrobial compounds, anti-cancerous alkaloids, food flavors, sweeteners, vitamins, insecticides, enzymes, antigens etc. The use of culture from diverse explant sources, cultural conditions like medium composition, plant growth regulators, temperature, pH, oxygenation, light etc. are considered to be important signaling elements in improving yield. Besides, precursor feeding, biotransformation, hairy root culture, use of elicitor (biotic and abiotic) compounds, high density cell culture, superior cell line selection are noted to be important strategies for enriching alkaloids in culture. Metabolic engineering, the genes, their encoded enzymes and protein products could provide some of the unexplored answers in regulating alkaloid yield.

The use of various cells/tissues even from adult organism is popular in investigating diseases and drugs. Tissue engineering is another emerging area in which combinations of cells and biomaterials have widely been used in regenerating and repairing new tissues The journal will welcome efforts of this nature in future issues. The prospective authors are therefore invited to submit contributions in Advances in Cell Science and Tissue Culture for sharing, showcasing and disseminating their valuable work.

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