



Dr. Mandeep Kaur Dhillon

Specialization: Plant Tissue Culture

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Designation: Assistant Professor in Botany

Professional and Academic Profile

Dr. Mandeep Kaur Dhillon did her B. Sc. (Hons. School) and M. Sc. (Hons. School) in Botany from Department of Botany, Panjab University, Chandigarh. She followed it up by an M. Phil in Plant Physiology from the same Department and a B. Ed. from Panjab University, Chandigarh.

After clearing her CSIR-NET, she got CSIR Fellowship Assistance for pursuing research. She decided to pursue her Doctoral research in the Orchid Tissue Culture Lab in Department of Botany, in joint venture with the Department of Biotechnology, Panjab University, Chandigarh; under the proficient guidance of renowned Orchidologist Prof. S. P. Vij, Microbiologist Prof. R. Tewari, and Prof. P. Pathak.

- She worked on two medicinally important indigenous plant, *Solanum xanthocarpum* and *Malaxis acuminata*; working on the seed germination potential of *Solanum xanthocarpum* was assessed at different developmental stages; *in vitro* raised shoots and these tissue culture raised plantlets were successfully transferred to green house conditions after acclimatization and fruits were obtained; fungal requirements of both immature and mature seeds of *Malaxis acuminata* could be successfully bypassed; *in vitro* pseudobulbs were successfully regenerated under selective nutritional combinations.
- Susceptibility of the two species to infection with *Agrobacterium rhizogenes* A4 strain was found to depend on the species infected and the type of explants; roots were successfully induced with

an increased frequency in *S. xanthocarpum* using *A. rhizogenes* A4 on the additional treatment of acetosyringone.

- The capacity to produce solasodine in the *in vivo* sourced *S. xanthocarpum* plants was assessed which varied with the plant part tested and the maturity of the fruits.
- Tissue cultures (callus, multiple shoots, roots, and seedlings) established utilizing various explants of *S. xanthocarpum* showed the potential to synthesize solasodine in various amounts.
- A negative correlation of solasodine profile with morphological differentiation was indicative of solasodine synthesis was tissue specific being remarkably influenced by organogenetic changes there in.
- The *in vitro* raised callus and roots exhibited the production of solasodine in comparable amounts to the *in vivo* plant parts indicating that tissue cultures possess the genetic information of the donor plant, which is fully expressed in the tissue cultured organs.

Teaching Experience:

Soon after submitting her thesis, she joined as an Assistant Professor in Biotechnology in Shanti Devi Arya Mahila College, Dinanagar, Gurdaspur (on three year Contractual Basis). She later joined Kamla Nehru College (Awarded Centre for Potential for Excellence), Phagwara as Lecturer in Biotechnology. Her next academic stint was with NAAC accredited Grade-A 125 year old institution Kanya Maha Vidyalaya, Jalandhar as an Assistant Professor in Biotechnology where she excelled in teaching Biochemistry and Plant Tissue Culture. She taught for three academic years in the highly esteemed and reputed College.

Presently serving as a Regular Assistant Professor in Botany in the reputed institution Guru Nanak College for Girls, Sri Muktsar Sahib.

She has presented Oral Papers as well as Poster Presentations in various National and Regional Conferences and Seminars. (Annexure given at the end of the profile)

Teaching Interests and Teaching Philosophy:

She excels in teaching about the Cell Structure, Diversity of plants, Spermatophytes, Plant Physiology and Biochemistry, and Ecological and Economic Aspects of Plants.

She takes extensive help of videos, photographs (self-clicked as well as internet sourced) and live plants as pedagogical tools in the classroom. She believes in giving as much as possible knowledge to the students and enabling them to grasp the maximum from her.

Students are also made aware about their responsibility to the world and their surroundings especially in the Ecology Lectures. Apart from subject teaching, they are also given moral and ethical values while teaching which has become an essential part of today's teaching. She also makes them aware about protecting themselves from various diseases. She especially stresses upon shunning the use of plastics in daily life and following healthy eating habits.

Trainings attended:

1. *Workshop on Basics of Bio-Informatics*, Panjab University, Chandigarh-160014. 28-29 Jan., '05.
2. Completed 28 days Orientation Course held by UGC-HRDC, Panjab University, Chandigarh from 28 April to 25 May, 2016.

Annexure:

List of Papers:

1. Medicinal orchids of Himachal Pradesh; their distribution, habit and flowering time. Promila Pathak, A. Bhattacharya, K. C. Mahant, Mandeep Kaur Dhillon, H. Piri and S. P. Vij. *Indian Journal of Non Timber Forest Products*, Vol 17 (3): 365-372, 2010.

List of Abstracts:

1. Effect of sucrose on germination in *Solanum xanthocarpum* Schrad and Wendle. Mandeep Kaur Dhillon. 19th Punjab Science Congress, SUS Group of Institutions, Tangori, Mohali. 7-9 Feb., 2016. **(Oral Presentation)**
2. Green pod culture in *Malaxis acuminata*: A therapeutically important orchid. Mandeep Kaur Dhillon. *CHASCON*, Panjab University, Chandigarh. 25-27 Feb., 2015. **(Oral Presentation)**
3. Effects of auxins on green pod culture in *Malaxis acuminata*: A therapeutically important orchid. Mandeep Kaur Dhillon. *National Conference on Advances in Agricultural Sciences and Biotechnology*. DAV College Jalandhar. 28 Feb., 2015.
4. Germination experiments in *Malaxis acuminata* D. Don. Mandeep Kaur Dhillon. 'Innovative Trends of Science and Technology in Current Scenario' 18th Punjab Science Congress. Desh Bhagat University, Mandi Gobindgarh under the aegis of Punjab Technical University, Kapurthala. 7-9 Feb., 2015. **(Oral Presentation)**

5. Effect of salt strength on seed germination in *Solanum xanthocarpum* Schrad and Wendle. Mandeep Kaur Dhillon. *Multi disciplinary National Conference Science Colloquium 'Emerging Trends in Basic and Applied Sciences'*. DAV College, Jalandhar. 6-7 Mar., 2014.
6. Germination experiments in medicinally important *Solanum xanthocarpum* Schrad and Wendle using immature green berries. Mandeep Kaur Dhillon. *National Conference on 'Perspectives and Trends in Plant Sciences and Biotechnology'*. Department of Botany, Panjab Univerwsity, Chjandigarh, Society for Plant Research, India. 21-23 Feb., 2014. **(Oral Presentation)**
7. Seed germination studies in *Solanum xanthocarpum* Schrad and Wendle. Mandeep \Kaur Dhillon. *17th Punjab Science Congress*. Punjab Technical University, Kapurthala. 14-16 Feb., 2014. **(Oral Presentation)**
8. The effect of organic additives on the germination potential of *Malaxis acuminata* D. Don. Mandeep Kaur Dhillon, Promila Pathak and S. P. Vij. *National Conference on 'Medicinal Orchids: Sustainable Use and Benefit Sharing for Rural and Tribal Communities'*. The Orchid Society of India, Botany Department, Panjab University, Chandigarh- 160014. 29-30 Mar., 2011. **(Oral Presentation)**
9. Bioenergy- A new hope for the millennium. Mandeep Kaur Dhillon. *National Seminar on 'Global Warming and Biodiversity Conservation'*. Zoology Department, JCDAV College, Dasuya. 27-28 Jan., '11. **(Oral Presentation)**
10. Making a big switch to biofuels. Mandeep Kaur Dhillon. *National Seminar on 'Global Environmental Change: Challenges and Management Strategies'*. Kanya Maha Vidyalaya, Jalandhar. 21-22 Jan., '11.
11. Plant tissue culture: A boon for medicinal plants. Mandeep Kaur Dhillon. *National Conference on 'Recent Trends in Biotechnology'*. Department of Biotechnology, DAV College, Amritsar. 1 Sep., '10.
12. Effect of NAA on *in vitro* seed germination in *Malaxis acuminata* D. Don. Dhillon, M. K., P. Pathak, R. Tewari, S. P. Vij. *Silver Jubilee Year 2008-09 of The Orchid Society of India and Symposium on Orchids: Science and Art*, Botany Department, Panjab University, Chandigarh-160014. 16-17 Dec., '08.
13. Effect of IAA on the germination of immature seeds of *Malaxis acuminata* D. Don. Mandeep Kaur Dhillon, Pathak, P., Tewari, R. and Vij, S. P. *National Conference on Orchids: Science and Society*. Central College, Bangalore University, Bangalore. 10-12 Apr, '08.

14. Effect of IBA on the seed germination of *Malaxis acuminata* D. Don. Mandeep Kaur Dhillon, Pathak, P., Tewari, R., and Vij, S. P. 2nd Chandigarh Science Congress: Empowering India by Scientific Integration, Innovation and Invention. Department of Botany, Panjab University, Chandigarh. 14-15 Mar., '08.
15. Green pod culture in medicinally important orchid, *Malaxis acuminata*: A study *in vitro*. Mandeep Kaur Dhillon, Promila Pathak, R. Tewari, S. P. Vij. 1st Chandigarh Science Congress: Learn Science- Live with Science. Panjab University, Chandigarh- 160014. 10-11 Mar., '07. **(Oral Presentation)**
16. Effect of different concentrations of BAP on seed germination and differentiation in medicinally important *Malaxis acuminata*: a study *in vitro*. Mandeep Kaur Dhillon, S. P. Vij, R. tewari, P. Pathak. 8th National Seminar on Orchid Conservation, Improvement and Commercialization and Satellite Symposium on Orchids: Why and How? The Orchid Society of India, Department of Botany, Panjab University, Chandigarh-160014. 18-19 Mar., '06.
17. Green pod culture of *Malaxis acuminata* D. Don- a medicinally important orchid. Mandeep Kaur Dhillon, R. Tewari, and Vishal Sharma. 93rd Indian Science Congress, The Indian Science Congress Association Kolkata, ANGRAU, Hyderabad. 3-7 Jan., '06.
18. *In vitro* propagation of a medicinally important plant- *Solanum xanthocarpum* Schrad and Wendle. Dhillon, Mandeep Kaur, Vij, S. P., Tewari, R., and Pathak, P. 9th Chandigarh Symposium on New Biology, Post Genomic Era: Emergence of Molecular Medicine, Department of Biotechnology, Panjab University, Chandigarh-160014. 14-15 Feb., '05.
19. Green pod culture in medicinally important orchid *Malaxis acuminata*: A study *in vitro*. Mandeep Kaur Dhillon, P. Pathak, R. Tewari, S. P. Vij. 1st T. N. Khushoo Memorial Award Lecture, NBRI, Lucknow. 6-8 Apr., '04.
20. Asymbiotic seed germination in *Malaxis acuminata*: A therapeutically important orchid. Mandeep Kaur Dhillon, Pathak, P., Vij, S. P., and Dhiman, Abhilasha. National Orchid Show and Symposium on "Orchid Research, Production and Marketing Strategies" at CSIR Science Centre, New Delhi. 8-10 Nov., '02.