ENLIGHTENMENT TO PERFECTION

UNIVERSITY OF NORTH BENGAL

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Raja Rammohunpur, Dist- Darjeeling, West Bengal, Pin-734013, India.

HomE

Department of Botany

Print

Dr. Palash Mandal

M.Sc., Ph.D., DCA

Assistant Professor

Members of Learned Societies:

Life Member- Indian Journal of Sericulture, Central Silk Board, Ministry of Textiles, GOI.

Member- Society for Ethnopharmacology, East Himalayan Society for Spermatophyte Taxonomy.

Contact Addresses:

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Subject Specialization: Plant Physiology & Pharmacognosy

Areas of Research Interest:

1) Understanding the role of oligopeptides in plant physiological system
2) Nitric oxide and calcium based signalling and their association with abiotic stress tolerance
3) Physiology of sprouts and upregulation of important metabolites through priming
4) Enhancing the economic attributes of silkworm through elicitation of mulberry leaf quality
5) Antioxidant and nutraceutical quality assessment of underexplored fruits and vegetables
6) Ethnomedicinal survey, pharmacognostic characterization and pharmacological evaluation
7) Phytochemical analysis and metabolic profiling

No. of Ph.D. students: **(a) Supervised:** 02 **(b) Ongoing:** 05.

No. of M.Phil. students: **(a) Supervised:** NA **(b) Ongoing:** NA.

No. of Publications: 61

Achievements And Awards:

- Junior Research Fellowship, DST, Govt. of India.
- CSIR-UGC Junior Research Fellowship & Lecturership (NET), Govt. of India.
- Gold Medal at Post Graduate Level, University of Kalyani for 1st Position in M.Sc.
- Graduate Aptitude Test for Engineering (GATE); Score 83.94 Percentile.

Professional Experiences: **Teaching**: Assistant Professor, University of North Bengal (2001-present)

Administrative Experience (Membership in Professional Organization at North Bengal University):

- Member of Post Graduate Board of Studies in Botany
- Member of Board of Research Studies
- Ex-Member of the Executive Council
- Ex-Member of the Faculty Council for Post Graduate Studies in Science
- Ex-Member of Under Graduate Board of Studies in Botany
- Ex-Member of Sports Board
- Ex-Member of Library Committee

As Mentor (Supervisor):

- 'Evaluation of antioxidant activities of some locally available edible plants of Darjeeling Himalaya' sponsored by UGC under "Research Fellowship in Science for Meritorious Student" during 2008-2010 as JRF and 2011-2012 as SRF, for performing Ph.D research to Ms. Mitali Ghosal in Department of Botany, University of North Bengal.

- 'Elicitor induced biochemical changes associated with nitric oxide and calcium signalling during seed germination in *Trigonella foenum-grarcum* L.' sponsored by DST under "Inspire Fellowship" during 2012-2013 as JRF and 2014-2016 as SRF, for performing Ph.D research to Mr. Saran Kumar Gupta in Department of Botany, University of North Bengal.

- 'Studies of phytochemical and antioxidant properties of selected liverworts of Darjeeling Himalaya' sponsored by UGC under "Maulana Azad National Fellowship Scheme" during 2012-2014 as JRF and 2015-2017 as SRF, for performing Ph.D research to Ms. Sumira Mukhia in Department of Botany, University of North Bengal.

- 'Pharmacognostic evaluation and in vitro antioxidant potential of some ethnomedicines used by traditional practitioners of West Sikkim' sponsored by UGC under "Rajiv Gandhi National Fellowship Scheme" during 2012-2014 as JRF and 2015-2017 as SRF, for performing Ph.D research to Ms. Arunika Subba in Department of Botany, University of North Bengal.

- 'Studies of biochemical attributes of mulberry leaves based silkworm rearing system through elicitation by low molecular weight peptides and other plant growth regulators' sponsored by UGC under "Research Fellowship in Science for Meritorious Student" during 2014-2016 as JRF for performing Ph.D research to Ms. Suchisree Jha in Department of Botany, University of North Bengal.

- 'Ethnomedicinal practices, usage and evaluation of plants in Terai and Duars region of West Bengal, India' sponsored by UGC under "Research Fellowship in Science for Meritorious Student" during 2015-2017 as JRF for performing Ph.D research to Mr. Priyankar Roy in Department of Botany, University of North Bengal.

Research Projects Completed:

Major Research Project			
Title of the Scheme Project	**Sanctioned Authority**	**Tenure of the Project**	**Total Grants Received**
Profile study of peptides and antioxidants of Mulberry leaves: in relation to their potential in artificial diet rearing system of silkworm	**UGC** [F. No. 39 – 346 / 2010 (SR), Dated: 01.02.2011]	2011-2014	Rs. 7,22,930/-
Minor Research Project			
Title of the Scheme Project	**Sanctioned Authority**	**Tenure of the Project**	**Total Grants Received**
Developmental stimulation of antioxidants in dark germinated *Trigonella foenum-graecum* L. by Nitric Oxide Donors and Scavengers	**NBU** [Ref. No. 773/R-13 dated 14.02.2013]	2013-2014	Rs. 75, 000/-

Selective List of Publications:

Book Chapters:

1. Ghosal M and Mandal P (2012). Antioxidant activity of three spices of Darjeeling Himalaya. In: ***Biology of plants and microbes.*** Eds. S Roy and D Bose. Levant Books, Kolkata. pp. 309.
2. Choudhury D, Ghosal M, Das AP and **Mandal P** (2011). Improvement of propagation techniques and evaluation of *in vitro* antioxidant activity of *Curcuma aeruginosa* Roxburgh. In: ***Recent studies in biodiversity and traditional knowledge in India.*** Eds. C Ghosh and A P Das. Gour Mahavidyalaya, Malda. pp 287-293.
3. **Mandal P** and Sircar PK (2005). High proton mediated phytotoxicity, alteration of peptide profile and sugar partitioning in germinating seedlings of *Vigna radiata* (L.) Wilczek. In: ***Stress Biology***. Eds. U Chakraborty and BN Chakraborty. Narosa Publishing House, New Delhi. pp. 158-163.

Journal Publication:

4. Sen S and **Mandal P** (2016). Solid matrix priming with chitosan enhances seed germination and seedling invigoration in mung bean under salinity stress. Accepted in ***Journal of Central European Agriculture*** [Accepted].
5. Jha S, Bhattacharyya P, Ghosh A and **Mandal** P (2016). Feeding preference of silkworm larvae depending on biochemical attributes related to mulberry genotypes. ***International Journal of Pharmacy and Pharmaceutical Sciences*** [Accepted]. *Impact Factor-1.59.*
6. Misra TK, Nanda Ak, **Mandal P** and Saha A (2016). Climatic variation of antioxidantive properties, phenolic and mineralnutraceuticals in tea (*Camellia sinensis* (L.) Kuntze) grown in North Bengal, District Darjeeling. ***International Journal of Applied Research***, 2(1): 601-605.
7. Gupta SK and **Mandal P** (2016). Assessment of the effect of nitric oxide and calcium ion on the therapeutic potential and oxidative stress status of fenugreek sprouts. ***Asian Journal of Pharmaceutical and Clinical Research***, 9(2): 271-77.
8. Gupta SK and **Mandal P** (2016). Bioinformatic characterization of SOD under UV in fenugreek (family: Fabaceae). ***International Journal of Pharmacy and Pharmaceutical Sciences***, 8(2): 231-37. *Impact Factor-1.59.*
9. Jha S, Ghosal M, Gupta SK, Ghosh A and **Mandal** P (2016). *In vitro* free radical scavenging potential of oligopeptides derived from wheat and mung bean. ***International Journal of Pharmacy and Pharmaceutical Sciences***, 8(1): 428-32. *Impact Factor-1.59.*
10. Gupta SK and **Mandal P** (2015). Involvement of calcium ion in enhancement of antioxidant and antidiabetic potential of fenugreek sprouts. ***Free Radicals and Antioxidants*****,** 5(2):74-82.
11. Jha S, Bhattacharyya P, Ghosh A and **Mandal** P (2015). A comparative study of silkworm (*Bombyx mori* L.) rearing under different sources of peptides isolated from Dudhiya and S1 mulberry leaves. ***NBU Journal of Plant Sciences***, 9(1): 98-106.
12. Jha S, Gupta PD, Bhattacharyya P, Ghosh A and **Mandal** P (2015). Impact of feeding of low molecular weight mulberry peptides on cocoon and silk development by *Bombyx Mori* L. (Bombycidae). ***Indian Journal of Sericulture*** **[Accepted].**
13. Jha S, **Mandal** P, Bhattacharyya P, Ghosh A (2015). Influence of antioxidant rich mulberry peptides on the growth rate pattern and economic attributes of silkworm. ***International Journal of Pure & Applied Bioscience,***3(2): 63-71.
14. Mukhia S, **Mandal P**, Singh DK and Singh D (2015). Evaluations of antidiabetic, antioxidant activity and phytochemical constituents of liverworts of Eastern Himalaya. ***Journal of Chemical and Pharmaceutical Research***, 7(10): 890-900. *Impact Factor-0.35.*
15. Subba A and **Mandal P** (2015). Antioxidant potential of *Fraxinus floribunda* Bark extracted through Various Aqueous Processing. ***Free Radicals and Antioxidants*****,** 5(1):1-7.
16. Subba A and **Mandal P** (2015). Pharmacognostic studies and *in vitro* antioxidant potential of traditional polyherbal formulation of West Sikkim with *Asparagus* spp. ***Pharmacognosy Journal***, 7(6):348-55. *Impact Factor-1.26.*

17. Gupta SK, Ghosal M, Choudhury D and **Mandal P** (2014). Assessment of antioxidant activity and polyphenolic content of *Couroupita guianensis* during flower and fruit maturation. ***International Journal of Recent Scientific Research*****,** 5(5):940-947.
18. Gupta SK, Ghosal M, Biswas R, Saha BK, Das AP and **Mandal P** (2014). Evaluation of *in vitro* antioxidant activity of methanolic extracts of some ferns from Mawsynram of Meghalaya, India. ***International Journal of Current Science*****,** 4:87-97.
19. Gupta SK, Mitali G, Dibakar C and **Mandal P (**2014). Dynamic Changes in Antioxidant Activity during Floral Development of *Couroupita guianensis.* ***British Journal of Pharmaceutical Research,*** 4(6): 676-694.
20. Ghosal M and **Mandal P** (2014). Deterioration of Antioxidant and Antidiabetic activity of seven taruls through boiling. ***NBU Journal of Plant Sciences*****,** 8(1):71-81.
21. Mukhia S, **Mandal P**, Singh DK, Singh D and Choudhury D (2014). *In-vitro* free-radical scavenging potential of three liverworts of Darjeeling Himalaya. ***International Journal of Pharmaceutical Sciences and Research*****,** 5(10):4552-4561. *Impact Factor-0.01.*
22. Choudhury D, Biswas R, **Mandal P** and Das AP (2014). Diversity of *Litsea* Lamarck [Lauraceae] in Terai and Duars regions of West Bengal, India. ***Pleione***, 8(1):68-78.
23. Gupta SK and **Mandal P** (2014). Free radical scavenging activity and histochemical localisation of reactive oxygen species in fenugreek sprouts primed with Nitric Oxide Donors. ***American Journal of Phytomedicine and Clinical Therapeutics*****,** 2(11):1310-1322.
24. **Mandal P** and Gupta SK (2014). Improvement of antioxidant activity and related compounds in fenugreek sprouts through Nitric Oxide priming. ***International Journal of Pharmaceutical Science Review and Research*****,** 26(1):249-257.
25. Jha S, **Mandal P**, Bhattacharya P and Ghosh A (2014). Free-radical scavenging properties of low molecular weight peptide(s) isolated from S1 cultivar of mulberry leaves and their impact on *Bombyx mori* (L.). (Bombycidae). ***Journal of Animal Science and Biotechnology*****,** *Impact Factor-1.689.*
26. Choudhury D, Mitali G, Das AP and **Mandal P** (2013). *In vitro* antioxidant activity of methanolic leaves and barks extracts of four *Litsea* plants. ***Asian Journal of Plant Science and Research*****,** 3(1): 99-107.
27. Choudhury D, Ghosal M, Das AP and **Mandal** P (2013). Development of single node cutting propagation techniques and evaluation of antioxidant activity of *Curcuma aeruginosa* Roxburgh rhizome. ***International Journal of Pharmacy and Pharmaceutical Sciences,***5(2): 227-234. *Impact Factor-1.59.*
28. Ghosal M and Mandal P (2013). *In-vitro* antidiabetic and antioxidant activity of *Calamus erectus* Roxb. fruit: a wild plant of Darjeeling Himalaya. *International Journal of Pharma and Bio Sciences,*4(2): 671-684.
29. Goswami P, **Mandal P**, Jha P, Misra TK and Barat S (2013). Antioxidant activities of different spices on the lipid oxidation of cooked and uncooked fillet of two fish species belonging to the genus *Puntius.* ***Journal of Agricultural Science and Technology*****,** 15: 737-746. *Impact Factor- 0.70.*
30. Lama B, Ghosal M, Gupta SK and **Mandal P** (2013). Assessment of different preservative solutions on vase life of cut roses**.** ***Journal of Ornamental and Horticultural Plants,*** 3(3): 171-181. *Impact Factor-0.54.*
31. Dutta B, Ghosal M, Chakrabarty P and **Mandal P** (2012). Anthelmintic and free-radical scavenging potential of various fractions obtained from foliar parts of *Glinus oppositifolius* (Linn.) DC. ***International Journal of Pharmacy and Pharmaceutical Sciences,***4(4): 233-239. *Impact Factor-1.59.*
32. Ghosal M and **Mandal P (**2012). Phytochemical screening and antioxidant activities of two selected 'bihi' fruits used as vegetables in Darjeeling Himalaya. ***International Journal of Pharmacy and Pharmaceutical Sciences***, 4(2): 567-574. *Impact Factor-1.59.*
33. **Mandal P** and Ghosal M (2012). Antioxidant activities of different parts of tree tomato fruit. ***International Journal of Pharmaceutical Sciences Review and Research,*** 13(2): 39-47.
34. Chhetri PK and **Mandal** (2012). *In-vitro* free radical scavenging activities of the leaves of *Malva verticillata* L. ***NBU journal of Plant Sciences,*** 6 **P** (1): 49-55.
35. Ghosal M, Chhetri PK, Ghosh MK and **Mandal P** (2011). Changes inantioxidant activity of *Cyphomandra betacea* (Cav.) Sendtn. fruits during maturation and senescence. ***International Journal of Food Properties,***16(7): 1552-1564. *Impact Factor-1.38.*
36. Mishra T, Goyal AK, **Mandal P** and Sen A (2011). Free radical scavenging activity of ornamental and edible cultivars of *Canna* found in Eastern India. ***NBU Journal of Plant Sciences,*** 5(1): 41-45.
37. Lepcha L, **Mandal P**, Misra TK and Sharma NP (2010). Comparative study of plant biodiversity and physic-chemical parameters of soil of landslide prone areas. ***International Journal of Ecology and Development,*** 17 (F10): 66-76.
38. **Mandal P,** Ghosal M, Misra TK and Das AP (2010). Pharmacognostic and free-radical scavenging activity in the different parts of Ashwagandha [*Withania somnifera* (L. Dunal)]. ***International Journal of Drug Development and Research,*** 2(4): 830-843. *Impact Factor-0.18.*
39. Ghosh A, **Mandal P** and Sircar PK (2010). Wheat (Triticum aestivum) peptide(s) mimic gibberellin action and regulate stomatal opening. ***Indian journal of Experimental Biology*****,** 48: 77-82. *Impact Factor-0.84.*
40. **Mandal P**, Misra TK and Singh ID (2010). Antioxidant activity in the extracts of two edible aroids. ***Indian Journal of Pharmaceutical Sciences,*** 72 (1): 105-108. *Impact Factor-0.48.*
41. Lepcha L, Misra TK, Ansari AA and **Mandal P** (2010). Plant biodiversity and soil erodibility of landslide prone areas of East Sikkim. ***Journal of Ecobiology,*** 26: 101-112
42. Ghosal M and **Mandal P** (2010). *In vitro* antioxidant activity of two edible Timbur fruits of Darjeeling Himalaya. ***NBU Journal of Plant Sciences,*** 4: 47-52.
43. **Mandal P**, Misra TK and Basu PK (2009). *In vitro* antioxidant potential of *Astilbe rivularis* rhizome. ***Canadian Journal of Pure and Applied Sciences,*** 3 (1): 649-654.
44. **Mandal P**, Misra TK, Singh ID, Das JK and Bhunia M (2009). Free-radical scavenging activity in the inflorescence of European Nettle/Sisnu (*Urtica dioica* L.). ***Journal of Young Pharmacist***, 1(2): 129-35.
45. Mandal P, Misra TK and Ghosal M (2009). Free-radical scavenging activity and phytochemical analysis in the leaf and stem of *Drymaria diandra* Blume. *International journal of Integrative Biology*, 7(2): 80-85.
46. **Mandal P**, Misra TK, Das AP and Singh ID (2009). Agronomic suitability assessment for growth, yield and antioxidant quality attributes of patchouli plant. ***Journal of Medicinal and Aromatic Plant Sciences,*** 31(4): 292-296.
47. Bhattacharya M, **Mandal P** and Sen A (2009). *In vitro* detection of antioxidants in different solvent fractions of ginger (*Zingiber officinale* Rosc.). ***Indian Journal of Plant Physiology,*** 14 (1): 23-27.
48. Lepcha L, **Mandal P** and Misra TK (2009). Relative distribution pattern of tree biodiversity in landslide prone areas of east Sikkim, India. ***Research in Environment and Life Sciences,*** 2 (4): 201-206.
49. Misra TK, Saha A, Nanda AK, Biswas R and **Mandal P** (2009). Shade trees in tea plantations in different soil conditions of North Bengal. ***Pleione,*** 3(2): 219-223.
50. Misra TK, **Mandal P** and Lepcha L (2009). Relationship of erodibility with soil properties and vegetation buffers at landslide prone areas in Sikkim. ***Journal of Hill Research,*** 22 (1): 43-49.
51. **Mandal P**, Misra TK, Ghosh A and Sircar PK (2009). Role of germination induced peptide pool in plant tissue culture. ***NBU Journal of Plant Sciences,*** 3: 53-58.
52. **Mandal P** and Misra TK (2008). *In-vitro* evaluation of free-radical scavenging potential of Pakhenbed leaves [*Bergenia ciliata* (Haw.) Sternb.]. ***International journal of Natural and Engineering Sciences,*** 3 (1): 01-04.
53. **Mandal P**, Misra TK, Singh ID and Nayak CR (2008). Chemical phytotoxicity and use of ethrel as ripening agent on productivity and quality of tomato (*Lycopersicon esculentum*). ***The Indian Journal of Agricultural Sciences,*** 78 (7): 581-583. *Impact Factor-0.14.*
54. **Mandal P**, Misra TK, Sarkar A, Ghosh A and Sircar PK (2008). Dynamic peptide profiles of germinating mungbean: In relation to their nature and separation pattern. ***Indian Journal of Plant Physiology,*** 13 (2): 111-117.

55. **Mandal P**, Misra TK, Ghosh A and Sircar PK (2008). Germination induced peptide pool regulate water homeostasis in plants. ***Journal of Plant Biology,*** 35 (2): 121-130. *Impact Factor-1.28.*
56. **Mandal P**, Misra TK and Singh ID (2008). *In vitro* evaluaton of free-radical scavenging potential of Tetapati leaves. ***Journal of Hill Research,*** 21 (2): 31-35.
57. Misra TK, Saha A, Nanda AK and **Mandal P** (2008). Variation of antioxidant properties and phytochemical constituents of tea cultivated under various agronomic conditions at Terai region of North Bengal. ***NBU Journal of Plant Sciences,*** 2: 58-66.
58. Kunduchoudhuri R, Ghosh A, **Mandal P**, Chaudhuri RK and Sircar PK (2007). *Vigna catjang* intermodal peptides (0.5-3.0 KDa) modulate root tip mitosis of *Allium sativum*. ***Journal of Botanical Society of Bengal,***61(1): 51-54. *Impact Factor-0.52.*
59. Misra TK and **Mandal P** (2007). Tea polyphenols: Variaton with respect to agro-climetic condition, their impact in human health and soil environment. ***NBU Journal of Plant Sciences,*** 1: 18-31.

Proceedings:

60. Misra TK, Saha A, Nanda AK and **Mandal P** (2008). Study of free-radical scavenging activity of different grades of organically and non-organically produced tea. ***Proceedings of National Seminar*** *on Improving Productivity and Quality of Tea through Traditional Agricultural Practices, held on 15-16 November, 2008* at University of North Bengal, Siliguri and published in **Rajasthan Chapter of Asian Agri-History Foundation**, **Udaipur, Rajasthan**.
61. Misra TK, Saha A, Nanda AK and **Mandal P** (2008). Integrated nutrient management packages for organic tea cultivation in North-East India Plains and Darjeeling Hills. ***Proceedings of National Seminar*** *on Improving Productivity and Quality of Tea through Traditional Agricultural Practices, held on 15-16 November, 2008* at University of North Bengal, Siliguri and published in **Rajasthan Chapter of Asian Agri-History Foundation**, **Udaipur, Rajasthan.**