BIODATA

Dr. Rakhi Chakraborty

Designation: **Assistant Professor (Stage-II) (W.B.E.S.)**

Office Address:

Department of Botany
Acharya Prafulla Chandra Roy Government College
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India

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Academic Qualifications:

- **B.Sc. in Botany (Honours) – 1st class with distinction in general subjects**
  From Malda College (Affiliated to University of North Bengal), Malda in the year 2006

- **M.Sc. in Botany - 1st class with distinction**
  From University of North Bengal, Siliguri in the year 2008

- **B.Ed. - 1st class**
  From Government Teachers Training College, Malda, India in the year 2010

- **Ph.D. (Thesis Title: Molecular Characterization for Antidiabetic and Antihyperlipidemic Properties of *Litsea cubeba* (Lour.) Pers. from Darjeeling Hills)**
  From University of Gour Banga, Malda, India in the year 2019

Other Qualifications:

Qualified Graduate Aptitude Test in Engineering (2008), CSIR-UGC National Eligibility Test (2008), West Bengal College Service Commission State Eligibility Test (2014)

Teaching experience:

- **Part-Time Lecturer**
  Gour Mahavidyalaya, Malda
  Duration of service: 10/11/2008 to 31/08/2010

- **Assistant Teacher in Biological Science (Hons./ P.G.)**
  Milki High School (H.S.), Malda
  Duration of service: 02/09/2010 to 28/02/2015

- **Assistant Professor of Botany (W.B.E.S.)**
  Acharya Prafulla Chandra Roy Government College, Matigara, Siliguri
  Duration of service: 02/03/2015 and continuing.

Administrative experience:

- **Head of the Department, Department of Botany,** Acharya Prafulla Chandra Roy Government College, Matigara, Siliguri from 01.09.2021 and continuing.

- **Convenor, Career Counselling Sub-committee,** Acharya Prafulla Chandra Roy Government College, Matigara, Siliguri

- **Convenor, ENVS Sub-committee,** Acharya Prafulla Chandra Roy Government College, Matigara, Siliguri

- Worked as members of Cultural sub-committee, University Examination sub-committee, research and project monitoring sub-committee and anti-ragging sub-committee

Research experience:

Experience of assessment of antidiabetic, antioxidant and antihyperlipidemic activities of medicinal plants *in vitro* and *in vivo*, along with isolation, purification, and characterization of antidiabetic active molecules. Experience on working on the characterization and sustainable utilization of starch from underutilized food crops. Experience on basics of computer-aided drug designing. Presently co-supervising and collaborating scientific research with Department of Botany, University of North Bengal.

Publications in journals and books (*Corresponding author) :

1. **Chakraborty R**, Roy S, Mandal V. **Assessment of traditional knowledge of the antidiabetic plants of Darjeeling and Sikkim Himalayas in the context of recent phytochemical and pharmacological advances.** Journal of Integrative Medicine. 2016; 14(5): 336–358. https://doi.org/10.1016/S2095-4964(16)60267-4

2. **Chakraborty R**, Roy S. **Exploration of the diversity and associated health benefitsof traditional pickles from the Himalayan and adjacent hilly regions of Indian subcontinent**. Journal of Food Science and Technology. 2018; 55: 1599. https://doi.org/10.1007/s13197-018-3080-7

3. **Chakraborty R**, Roy S. **Evaluation of the diversity and phylogenetic implications of NAC transcription factor members of four reference species from the different embryophytic plant groups**. Physiology and Molecular Biology of Plants.2018; https://doi.org/10.1007/s12298-018-0581-9
4. **Chakraborty R**, Mandal V. ***In vitro* hypoglycemic and antioxidant activities of *Litsea cubeba* (Lour.) Pers. fruits, traditionally used to cure diabetes in Darjeeling Hills (India)**. Pharmacognosy Journal. 2018;10(6s):s119-s128. https://doi.org/10.5530/pj.2018.6s.23
5. **Chakraborty R**, Pal D, Roy S. **Characterization of *Leucas aspera* and evaluation of antioxidant activities before and after being subjected to digestion enzymes**. International Journal of Vegetable Science. 2020; 26(3):302-320. https://doi.org/10.1080/19315260.2019.1630540

6. **Chakraborty R**, Mandal V. **Role of Phytomedicine in Alleviating Oxidative Stress-Mediated Vascular Complications in Diabetes**. In book: **Evidence Based Validation of Traditional Medicines**. S.C. Mandal et al. (eds.) Springer Nature Singapore Pvt. Ltd. 2021. https://doi.org/10.1007/978-981-15-8127-4_7

7. Firdousi S, **Chakraborty R**, Roy S. **Nutritional and Antioxidant Properties of the Seeds of *Vigna unguiculata* subsp. *sesquipedalis* (L.) Verdc. -An Underutilized Legume of West Bengal.** NBU Journal of Plant Sciences. 2021; 13(1):27-41. https://doi.org/10.55734/NBUJPS.2021.v13i01.004

8. **Chakraborty R**, Sabrina S, Roy R, Majumdar S, Roy S. **Banana pseudostem substitution in wheat flour biscuits enriches the nutritional and antioxidative properties with considerable acceptability**. SN Applied Sciences. 2021; 3(1):75. https://doi.org/10.1007/s42452-020-03988-1

9. **Chakraborty R**, Roy S. **Angiotensin-converting enzyme inhibitors from plants: A review of their diversity, modes of action, prospects, and concerns in the management of diabetes-centric complications**. Journal of Integrative Medicine. 2021; 19(6):478-492. https://doi.org/10.1016/j.joim.2021.09.006

10. Roy S, Chakraborty AP, **Chakraborty R**. **Understanding the potential of root microbiome influencing salt-tolerance in plants and mechanisms involved at the transcriptional and translational level**. Physiologia Plantarum. 2021; 173(4):1657- 1681. https://doi.org/10.1111/ppl.13570

11. Karmakar B, Miya FU, **Chakraborty R**, Roy S. **Comparative analyses of the starch quality isolated from a local red potato and a commercial non-pigmented potato cultivar**. Vegetos. 2022; https://doi.org/10.1007/s42535-021-00331-w

12. **Chakraborty R. Role of Secondary Metabolites and Prospects of Engineering Secondary Metabolite Production for Crop Improvement**. In book: Plant Stress: Challenges and Management in the New Decade. S. Roy et al. (eds.) Springer Nature Switzerland AG 2022. https://doi.org/10.1007/978-3-030-95365-2_25

13. Karmakar B, **Chakraborty R,** Roy S. **Morphological and Anatomical Studies on Some Members of Araceae of North Bengal**. NBU Journal of Plant Sciences. 2022; 14(1):40-48. https://doi.org/10.55734/nbujps.2022.v14i01.007

14. **Chakraborty R**, Roy S, Chellappan DR, Mandal V. ***In vivo* and network pharmacological analysis of the antidiabetic and antihyperlipidemic metabolites of *Litsea cubeba* fruits**. South African Journal of Botany. 2022; 149: 516-529. https://doi.org/10.1016/ j.sajb.2022.06.049

15. Karmakar B, Saha SP, **Chakraborty R*,** Roy S. **Optimization of starch extraction from *Amorphophallus paeoniifolius* corms using response surface methodology (RSM) and artificial neural network (ANN) for improving yield with tenable chemical attributes**. International Journal of Biological Macromolecules. 2023; 237(2):124183. https://doi.org/10.1016/j.ijbiomac.2023.124183

16. Mathur P, **Chakraborty R**, Aftab T, Roy S. **Engineered nanoparticles in plant growth: Phytotoxicity concerns and the strategies for their attenuation**. Plant Physiology and Biochemistry. 2023; 199:107721. https://doi.org/ 10.1016/j.plaphy.2023.107721

17. Toppo P, Kagatay LL, Gurung A, Singla P, **Chakraborty R***, Roy S, Mathur P. **Endophytic fungi mediates production of bioactive secondary metabolites via modulation of genes involved in key metabolic pathways and their contribution in different biotechnological sector**. 3 Biotech. 2023; 13:191. https://doi.org/10.1007/s13205-023-03605-z

18. **Chakraborty R***. **Present Status and Challenges in Meeting Food Demand: Case Studies with Respect to Developing Countries**. In book: **Food Production, Diversity, and Safety Under Climate Change**. **Chakraborty et al. (eds)**. Springer Cham. 2024. https://doi.org/10.1007/978-3-031-51647-4_1

19. Karmakar B, Sarkar S., **Chakraborty R***, Saha SP, Thirugnanam A, Roy P, Roy S. **Starch-based biodegradable films amended with nano-starch and tannic acid-coated nano-starch exhibit enhanced mechanical and functional attributes with antimicrobial activity**. Carbohydrate Polymers. 2024. 122321. https://doi.org/10.1016/j.carbpol.2024.122321

Papers presented in Seminars:

1. **Appraisal of antidiabetic and antihyperlipidemic activity of *Litsea cubeba*** (Lour.) Pers. from Darjeeling Hills. Presented in National Seminar on "Recent Discoveries in Medicinal and Aromatic Plants Research (REDIMAP-2018)", Organized by ADP College, Nagaon, Assam andSponsored by DST-SERB, Govt. of India on 17-18 August 2018.

2. **Characterization and validation of fruits of *Litsea cubeba* (Lour.) Pers., traditionally used to cure hyperglycemia in Darjeeling Hills**. Presented in National Seminar on "Pharmacy and Healthcare: Traditional Knowledge to Modern Techniques", Organized by Jadavpur University, Kolkata and Sponsored by DST-SERB, Govt. of India on 14 September 2018.

3. ***In vivo* antidiabetic and antihyperlipidemic activities of *Litsea cubeba* (Lour.) Pers. from Darjeeling Hills in HFD-STZ induced diabetic model rats**. Presented in International Seminar on "Current Avenues in Microbial and Plant Sciences (CAMPS-2019)", Organized by University of Gour Banga, Malda on 23-25 February 2019.

4. **Bioassay guided fractionation and characterization of fruits of *Litsea cubeba* (Lour.) Pers. for antidiabetic and antihyperlipidemic activities**. Presented in National Seminar on "New Horizon in Botanical Research", Organized by Department of Botany, University of North Bengal, Siliguri on 20-21 February 2020.

5. **Appraisal of antidiabetic and antihyperlipidemic activities of fruits of *Litsea cubeba* (Lour.) Pers**. Presented in "27th West Bengal State Science & Technology Congress, 2020", Organized by Department of Science & Technology and Biotechnology, Government of West Bengal on 28-29 February 2020.

6. **Assessment of antidiabetic and antihyperlipidemic potential of bioactive metabolites isolated from *Litsea cubeba* (Lour.) Pers. by network pharmacological analysis**. Presented in International web seminar on "Modern trends in Humanities, Science & Technology and Social Sciences for Sustainable Development", Organized by Acharya Prafulla Chandra Roy Government College, Siliguri on 23-24 September, 2021.

7. **Physicochemical, antioxidant and sensory characteristics of biscuits prepared from wheat flours partially fortified with banana pseudostem core flour**. Presented and awarded as "best oral presentation" in National seminar (online mode) on "Advancements of Plant Sciences for Food Diversity and Nutritional Security", Organized by Department of Botany, University of North Bengal, Siliguri on 30th September-1st October, 2021.

8. **Antidiabetic and antihyperlipidemic activities of the fruit extract of *Litsea cubeba* (Lour.) Pers. from Darjeeling Hills, India**. Presented and awarded as "best oral presentation" in International Conference on "Advances in Plant, Microbes and Agricultural Sciences (APMAS 2023)" Organized by Department of Botany, University of North Bengal, Siliguri on 2-4 March, 2023.

9. **Optimization of starch extraction from the corms of *Amorphophallus paeoniifolius***

and preparation of biofilms having antimicrobial properties. Presented and awarded as "second best oral presentation" in National Conference on "Future of Agriculture and Agriculture For Future: Indian Perspective" Organized by Sher-e-Kashmir University of Agricultural Sciences & Technology of Kashmir on September 4-6, 2023.

10. **Preparation of starch-based biofilms from *Amorphophallus paeoniifolius* with antimicrobial properties for use as packaging materials**. Presented in the International Conference on "Environmental Design, Material Science, and Engineering Technologies – 1st Edition" Organised by IEREK at Abu Dhabi University, Dubai Campus on 22-24 April 2024.

Courses attended:

1. Orientation Programme, organized by UGC-HRDC, University of North Bengal on 15th November-12th December, 2018.
2. Refresher Course in "Recent trends in Chemistry & Biology (Inter-disciplinary)", organized by UGC-HRDC, University of North Bengal on 20th August -2nd September, 2019.
3. Online course on "Python for beginners", organized by Electronics & ICT Academy, IIT Roorkee on 5th June-5th July, 2020.
4. Online course on "Computer-aided drug discovery against Covid-19", organized by Department of Biotechnology, National Institute of Technology, Raipur on 24^{th}-28^{th} August, 2020.
5. International E-workshop on "Machine Learning Applications in Drug Discovery: Basic to Advanced (MLADDBA-2021)", organized by Department of Biotechnology, Vignan's Foundation for Science, Technology & Research (Deemed to be University), Vadlamudi, India on 17th May-31st May, 2021.
6. Refresher Course on "Emerging Trends in Natural and Biological Sciences", organized by UGC-HRDC, University of North Bengal on 9th -22nd September, 2022.