Curriculum Vitae

Name: **Keshav Kant Sahu**

Date of Birth: November 24, 1972

Status: Married

Designation: Professor & Head

Address: School of Studies in Biotechnology
Pt. Ravishankar Shukla University
Raipur 492 010, India
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Education:

1. High School Certificate, MP Board of Secondary Education, Bhopal - 1988.
2. Higher Secondary School Certificate, MP Board of Secondary Education, Bhopal - 1990.
3. Bachelor of Science (Biology), Pt. Ravishankar Shukla University, Raipur - 1993.
4. Master of Science (Bioscience, with specialization in Biotechnology, secured 3rd rank in the University Merit List), Pt. Ravishankar Shukla University, Raipur - 1995.
5. Post Graduate Diploma in Translation, Pt. Ravishankar Shukla University, Raipur - 1996.
6. Doctor of Philosophy (Bioscience, Subject area: Seed and Nursery Technology), Pt. Ravishankar Shukla University, Raipur - 2000.
   Title of the Thesis: Physiological and Biochemical Aspects of Dieback in Sal (*Shorea robusta*) saplings
   Research Centre: School of Life Sciences, Pt. Ravishankar Shukla University, Raipur 492 010, India
   Ph. D. Supervisor: Prof. S. C. Naithani, School of Life Sciences, Pt. Ravishankar Shukla University, Raipur 492 010, India

Positions Held:

1. Junior Research Fellow (DST project), School of Life Sciences, Pt. Ravishankar Shukla University, Raipur, October 1995 - October 1998.
2. Research Fellow, School of Life Sciences, Pt. Ravishankar Shukla University, Raipur, November 1998 - October 1999.
3. Research Assistant, School of Life Sciences, Pt. Ravishankar Shukla University, Raipur, November 1999 - August 2003.
4. Lecturer, School of Life Sciences, Pt. Ravishankar Shukla University, Raipur, September 2003 - August 2007.
5. Senior Lecturer/ Assistant Professor, School of Life Sciences, Pt. Ravishankar Shukla University, Raipur, September 2007 - October 2012.
6. Associate Professor, School of Studies in Biotechnology, Pt. Ravishankar Shukla University, Raipur, November 2012 - November 2015.
7. Professor, School of Studies in Biotechnology, Pt. Ravishankar Shukla University, Raipur, November 2015 - till date.

8. Head of the Department, School of Studies in Biotechnology, Pt. Ravishankar Shukla University, Raipur, July 2019 - till date.
9. Coordinator, Central Instrumentation Facility (NCNR), Pt. Ravishankar Shukla University, Raipur, September 2024 - till date.

Awards/ Honors:

1. Recipient of "***Certificate of Appreciation***" for significant contribution in the progression of the University, during Foundation Day Celebration, on May 01, 2007, from Pt. Ravishankar Shukla University, Raipur, administration.
2. **International Travel Grant (full)** received from Department of Science & Technology, Govt. of India, for oral paper presentation at 7th International Workshop on Desiccation Sensitivity and Tolerance Across Life Forms, South Africa (Ref: ITS/5071/2015-16, dated 02.12.2015).
3. Recipient of *"**Associate Professor of the Year (Science) Award**"* for the academic session 2015-16, during Teachers Day Celebration, on September 07, 2016, from Pt. Ravishankar Shukla University, Raipur, administration.

Patents:

1. Enzyme loaded navigated nanomatrix systems to the inflamed synovial locus for the treatment of rheumatoid arthritis. Innovation Patent No: 2021106679, Dated 17 November 2021, Commonwealth of Australia, Australia.
2. A method of preparation of Triamcinolone Acetonide encapsulated nanostructured lipid carriers for psoriasis treatment. Innovation Patent No: 2021106678, Dated 01 December 2021, Commonwealth of Australia, Australia.

Member in Academic Bodies:

1. Member, DRC Life Sciences, Pt. RSU, Raipur (2010-12)
2. Member, DRC Biotechnology, Pt. RSU, Raipur (2010-till date)
3. Member, Board of Studies of Microbiology, Pt. RSU, Raipur (2011-14)
4. External Expert, Board of Studies of Life Science, MATS University, Raipur (2012-till date)
5. Member, Board of Studies of Biotechnology, Pt. RSU, Raipur (2014-17)
6. Vice-Chancellor's Nominee in Examination Committee of B Sc/ M Sc in Biotechnology, of Pt. RSU, Raipur (2016-17)
7. Member, Teacher Benefit Fund Committee, Pt. RSU, Raipur (2016-till date)
8. Chairman, Board of Studies of Microbiology, Govt. Digvijay Autonomous PG College, Rajnandgaon (2016-till date)
9. Chairman, Board of Studies of Biotechnology, Pt. RSU, Raipur (2017-20)
10. Member, Academic Council, Pt. RSU, Raipur (2017-till date)
11. State Academic Coordinator for National Children Science Congress (Department of Science & Technology, New Delhi), nominated by Chhattisgarh Council of Science & Technology, Raipur (2018-20).
12. Chairman, Central Board of Studies of Biotechnology, Department of Higher Education, Government of Chhattisgarh, Raipur (2018-21)
13. Subject Expert, Board of Studies of Biotechnology, Govt. Nagarjun Post Graduate Science College, Raipur (2018-20)
14. Subject Expert, Board of Studies of Botany, Govt. Nagarjun Post Graduate Science College, Raipur (2018-20)
15. Member, Board of Studies of Biotechnology, Sant Gahira Guru University, Ambikapur, Sarguja (2018-20)
16. Member, Examination Committee of Biotechnology, Bastar University, Jagdalpur (2018-20)
17. External Subject Expert, Board of Studies of Biotechnology, Guru Ghasidas Central University, Bilaspur (2019-21)
18. Member, Academic Council, ITM University, Raipur (2019-22).
19. Member, Board of Studies of Biotechnology, Bastar University, Jagdalpur (2019-22)

20. Member, Academic Council (Autonomous Scheme) of Govt. Nagarjun Post Graduate Science College, Raipur (2020-22)
21. External Subject Expert, Board for School of Studies of Interdisciplinary Education & Research, Guru Ghasidas Central University, Bilaspur (2020-23)
22. Member, Standing Committee of Govt. Nagarjun Post Graduate Science College, Raipur (2020-22)
23. Member, Board of Studies of Biotechnology, Pt. RSU, Raipur (2020-23)
24. Member, Board of Studies of Biotechnology, AMITY University, Raipur (2021-23)
25. Member, Departmental Research Committee: Biotechnology, AMITY University, Raipur (2021-23)
26. Member, Academic Council, Pt. RSU, Raipur (2021-24)
27. Member, Departmental Research Committee: Biotechnology, Guru Ghasidas Central University, Bilaspur (2022-25)
28. Member (Chancellor Nominee), Academic Council, ITM University, Raipur (2022-25)
29. Member, Academic Program and Evaluation Board, Pt. RSU, Raipur (2023-26)
30. Member, Examination Committee of Biotechnology, Shaheed Mahendra Karma University, Jagdalpur (2023-25)
31. Member, Research Degree Committee: Biotechnology, AMITY University, Raipur (2023-25)
32. Chairman, Board of Studies of Biotechnology, Pt. RSU, Raipur (2023-26)
33. Member, Academic Council, Bharti University, Durg (2024-27)
34. Member, Asian Council of Science Editors, Dubai, UAE (2025)

Member in Governing Bodies:

1. Member, Seth Phoolchand Agrawal College, Nawapara, Rajim (2021-23)
2. Alshums Infotech College, Nigri-Sihawa, Dhamtari (2021-23)
3. Maharaja Agrasen International College, Raipur (2023-25)
4. Shri Parry Ganga College, Mainpur, Gariyabandh (2023-25)

Administrative Responsibilities:

1. Assistant Coordinator, Central Valuation Unit, Pt. RSU, Raipur (2004)
2. Assistant Coordinator, Central Valuation Unit, Pt. RSU, Raipur (2005)
3. Assistant Coordinator, Revaluation Unit, Pt. RSU, Raipur (2006)
4. Assistant Coordinator, Revaluation Unit, Pt. RSU, Raipur (2007)
5. Assistant Coordinator, Revaluation Unit, Pt. RSU, Raipur (2008)
6. Secretary, Purchase Committee, SoS in Biotechnology, Pt. RSU, Raipur (2013-19)
7. Head of the Department, SoS in Biotechnology, Pt. RSU, Raipur (July 2019-till date)
8. Member, State Level Biodiversity Expert Committee, Department of Forest, Govt. of Chhattisgarh, Raipur (2021-till date)
9. Coordinator, Central Instrument Facility, Pt. RSU, Raipur, (September 2024-till date)

Editorial Responsibilities:

1. Associate Editor, CSVTU International Journal of Biotechnology, Bioinformatics and Biomedical (2015-17).
2. Technical Editor, Biotechnology (Scopus Indexed journal of Science Alert)
3. Technical Editor, Asian Journal of Plant Sciences (Scopus Indexed journal of Science Alert)
4. Technical Editor, Pakistan Journal of Biological Sciences (Scopus Indexed journal of Science Alert)
5. Reviewer, Journal of Tropical Forest Science, by FRIM, Malaysia.
6. Reviewer, Plant Physiology and Biochemistry, by Elsevier (IF 4.9).
7. Reviewer, Journal of Plant Physiology, by Elsevier (IF 3.7)
8. Reviewer, African Journal of Agricultural Research, by Academic Journals.
9. Reviewer, Greener Journal, by Scandevian Society.
10. Reviewer, Plant Growth Regulation, by Springer (IF 3.67)

11. Reviewer, Fluoride, by International Society of Fluoride Research, New Zealand (IF 2.7)
12. Reviewer, Environmental Science & Pollution Research, by Springer (IF 4.4)
13. Reviewer, International Letters of Natural Sciences, by Sci Press, Switzerland (ISI indexed)
14. Reviewer, Bioremediation Journal, by Taylor and Francis (IF 0.85)
15. Reviewer, Ecotoxicology and Environmental Safety, by Elsevier (IF 3.1)
16. Reviewer, Defense Life Science Journal, by DRDO, New Delhi
17. Reviewer, Physiology & Molecular Biology of Plants, by Springer (IF 2.1)
18. Reviewer, Journal of Plant Interactions, by Taylor & Francis (IF 1.62)
19. Reviewer, Conservation Physiology, by Oxford Press (IF 2.32)
20. Member, Editorial Board of Integrative Molecular Biology and Biotechnology, by SCIAEON Publishing Group, UK.
21. Member, Editorial Board of World Journal of Nanoscience and Nanotechnology, by MedText Publications, USA.
22. Member, Editorial Board of Asian Journal of Botany, by En-Press Publications, Tustin, USA
23. Reviewer, Physiologia Plantarum, by Wiley (IF 3.58)
24. Reviewer, Ecotoxicology, by Springer (IF 2.98)
25. Reviewer, Biocatalysts and Agriculture Biotechnology, by Elsevier (IF 2.19)
26. Reviewer, South African Journal of Botany, by Springer (IF 2.6)
27. Reviewer, BMC Microbiology, by Springer Nature (IF 3.2)
28. Reviewer, Plant Cell Reports, by Springer (IF 3.56)
29. Reviewer, Journal of Hazardous Materials, by Elsevier (IF 10.01)
30. Reviewer, Molecular Biology Reports, by Springer (IF 2.1)
31. Editor, Journal of Botany & Plant Pathology Research, Medwin Publisher, USA
32. Member, Technical Committee of SC Bose Biotechnology Incubation Centre, Govt. of Chhattisgarh, Raipur.

External Examiner of Ph. D. Thesis:

1. Sant Gadge Baba Amravati University, Amravati, Maharashtra
2. University of Kwa-Zulu, Natal, Durban, South Africa
3. Dr Babasaheb Ambedkar Marathwada University, Aurangabad, Maharashtra
4. Shivaji University, Kolhapur, Maharashtra
5. Central University of Allahabad, Allahabad, Uttar Pradesh
6. Savitribai Phule Pune University, Pune, Maharashtra
7. Swami Ramanand Teerth Marathwada University, Nanded, Maharashtra
8. Sambalpur University, Jyotivihar, Burla, Odisha
9. Panjab (Central) University, Chandigarh
10. Indira Gandhi National Tribal University, Amarkantak, Madhya Pradesh
11. Atal Bihari Vajpayee University, Bilaspur, Chhattisgarh
12. Ravenshaw University, Cuttack, Odisha

Teaching Experience:

UG teaching: 3 years (2006-09). PG teaching: more than 21 years (2000-till date)

Dealt/ Dealing with;

Seed Technology	M Sc Biotechnology (2003-04)
Plant Physiology	M Sc Bioscience (2003-12)
Developmental Biology	M Sc Bioscience (2003-12)
Plant Biochemistry	M Sc Biochemistry (2005-12)
Computer Application in Biology	M Sc Bioscience/ Microbiology (2005-12)
Biostatistics & Computer Application	M Sc Biotechnology (2013-till date)
Cell Biology	M Sc Biotechnology (2013-till date)
Functional Genomics & Proteomics	M Sc Biotechnology (2013-till date)
Applied Biotechnology	M Phil & Ph D course work (2013-till date)

Member in Professional Bodies:

1. Indian Society of Plant Physiologists, New Delhi
2. Indian Society of Tree Scientists, Nauni-Solan
3. Academy of Plant Sciences, Muzaffarnagar
4. Hind Agri-Horticultural Society, Muzaffarnagar
5. Alumni Association, School of Life Sciences, Pt. RSU, Raipur
6. Teachers Association, Pt. RSU, Raipur

Thrust Areas of Research:

1. Age induced metabolic amendments in tropical tree seeds.
2. Post-harvest handling and storage of tropical tree seeds.
3. Raising and maintenance of nursery of tropical tree species.
4. Heavy metal-imposed injuries in seeds/ seedlings.
5. Salinity induced responses in seeds/ seedlings.
6. Propagation and conservation of medicinal plants.
7. Microbial remediation of heavy metals and pesticides.
8. Drug delivery system

Research Guidance:

PDF:

1.	Neha Pandey (SERB-NPDF Fellow)	Efficacy of alginate encapsulated plant growth promoting bacterial consortia against arsenic toxicity in *Oryza sativa* L.	2017

Ph D:

Awarded

1.	Suruchi Parkhey (UGC-BSR Fellow)	ROS mediated lipid peroxidation, protein carbonylation and DNA fragmentation in *Shorea robusta* seeds during natural ageing	2014
2.	Shweta N. (CGCOST Fellow)	Domestication and molecular identification of pesticide resistant soil indigenous bacteria	2018
3.	Ravishankar Chauhan (UGC-RGNF Fellow)	Clonal propagation and long term conservation of *Chlorophytum borivilianum* Sant et Fernand	2018
4.	Vibhuti Chandrakar (DST-INSPIRE Fellow)	Arsenic induced metabolic dysfunction, growth inhibition and its amelioration in *Glycine max* L.	2018
5.	Jipsi Chandra (UGC-NF Fellow)	Biochemical and molecular mechanisms involved in the affliction of longevity of Mahua (*Madhuca latifolia*) seed	2019
6.	Bhumika Yadu (DRDO Fellow)	Fluoride-induced metabolic and molecular modifications and its management in *Cajanus cajan* L.	2019
7.	Roseline Xalxo (UGC-RGNF Fellow)	Phytotoxic impacts of simulated acid rain and lead on growth and oxidative metabolism of *Trigonella foenum-graecum* seedlings	2020
8.	Priya Katiyar (UGC-JRF Fellow)	Plant growth promoting bacteria and systemic tolerance to fluoride toxicity in *Oryza sativa* L.	2023
9.	Rasleen Kaur (CGCOST Fellow)	Modulation in gene expression and hormonal responses by nanoparticles for resurgence of aged *Cajanus cajan* Seeds	2023
10.	Anita Bhoi (UGC-JRF Fellow)	Development of ligand conjugated bioactive loaded metallic nanocarriers targeting oxidative stress-induced inflammation in Rheumatoid arthritis	2025

Registered

1.	Sharda Rajput (DBT-JRF Fellow)	Evaluation of suitability of lignocellulosic agricultural waste and indigenous bacterial strain for the production of single cell protein	2023
2.	Poulomi Bera (UGC-JRF Fellow)	Development of mucoadhesive formulation containing navigated nanoliposomes for the management of oral squamous cell carcinoma	2024
3.	Nidhi Yadu	Development of smart antimicrobial topical gel loaded with bioactive(s) for the management of diabetic wound	2024

M Phil:

1.	Trilok Sukhdev (UGC-RGNF Fellow)	Antioxidant activity, flavonoid and phenolic contents in leaves and roots of *R. serpentina* and *W. somnifera*	2008
2.	Arun Kumar Sahu	Influence of salt stress on antioxidant defense system, superoxide radical, lipid peroxidation, protein and its carbonylation in germinating *Cicer arietinum* seeds	2009
3.	Deepa Biswas	Effects of Al^{3+} on oxidative stress related antioxidant enzymes activities in *Cicer arietinum* seeds	2010
4.	Priyanka Dewangan	Reactive oxygen species metabolism during accelerated ageing of *Cicer arietinum* seeds	2011
5.	Mamta Tandon (UGC-RGNF Fellow)	Role of protein and DNA oxidation during loss and re-establishment of desiccation tolerance in germinated *Pisum sativum* seeds	2012
6.	Shristi Yadu	Salicylic acid and salinity tolerance in *Pisum sativum* seeds	2014
7.	Mona Tandon	Desiccation promoted reduction in metabolic inequity in *Cicer arietinum* radicles	2014
8.	Piu Chakraborthy	Nickel elicited oxidative damage in germinating *Pennisetum typhoideum* seed	2014
9.	Sneha Kulbhaje	Influence of organophosphates and arsenic on key enzymes of biogeochemical cycles	2015

M Sc (Dissertation):

1.	Vandana Kropi	Dehydration damage and repair in imbibed *Cicer Arietinum* seeds.	2006
2.	Renu Sahu	Optimum temperature for germination of *Cicer arietinum* and *Phaseolus aureus* seeds	2007
3.	Sarita Tripathi	Reversal of germination percentage in accelerated ageing seeds of *Cicer arietinum* by priming	2008
4.	Mukta Rao	Review on: ROS mediated lipid, protein and DNA oxidation in plants	2010
5.	Balram Sahu	Gram seed deterioration: assessment of some physiological and biochemical aspects	2011
6.	Isha Sharma	Reactive oxygen species and DNA damage	2011
7.	Gunjan Rughani	Production and localization of ROS in assorted seeds indulged with different abiotic stress	2014
8.	Ritu Sahu	Influence of insecticide(s) and metalloid on total microbial population, total protein content and dehydrogenase activity of the soil	2016
9.	Teman Lal Dewangan	Efficacy of salicylic acid and nitric oxide in conferring salt stress tolerance to *Pisum sativum* L.	2016
10.	Richa	Dimethylthiourea antagonizes oxidative responses of arsenic by inflating the antioxidative system	2017

11.	Jeabunnisha Khan	Ameliorative implications of silver nanoparticles on artificially aged seeds of *Cicer arietinum*	2019
12.	Deepali Nagre	Melatonin attenuates arsenic toxicity via antioxidants in *Cicer arietinum* L.	2019
13.	Ankita Tiwari	Synthesis and characterization of antimicrobial activity of silver nanoparticles	2020
14.	Naaz Fatima	Isolation of DNA for RAPD analysis from fresh leaves of three different *Ocimum* species	2020
15.	Shreya Gupta	Assessment of antioxidant and antimicrobial activities of some of the fruits and medicinal plants	2021
16.	Aajila Thara	Phytotoxic impacts of 2,4-Dinitrotoluene on growth and metabolism of *Vigna radiata* L. seeds	2021
17.	Anand Besekar	Gold nanoparticles: Fastest tool for onsite detection of pesticides	2022
18.	Pragya Shrivastava	Role of plant growth promoting bacteria in reducing fluoride toxicity in *Vigna radiata* L. seedlings	2022
19.	Kari Pooja Rani	An assessment of potency of silver nanoparticles to rejuvenate artificially aged *Cajanus cajan* seeds	2022
20.	Shruti Shastri	Proline mediated rescue of adverse effects of 2,4-DNT in *Vigna radiata* L. seeds	2023
21.	Sheenum Sahoo	Exploration of antibacterial potential of leaf extract of *Moringa oleifera*: A comprehensive analysis of mechanisms and efficacy	2023
22.	Yashvani Meshram	Cadmium foisted amendments and their assuagement *via* silver nanoparticles in *Vigna radiata*	2023
23.	Chitra Nareti	Amelioration of inflammation and oxidative stress in complete Freund's adjuvant-induced Rheumatoid arthritis model *via* quercetin-conjugated silver nanoparticles	2024

Research Project/ Grant Support Received:

1.	Molecular markers for characterization of dieback in Sal (*Shorea robusta)* seedlings: protein and antioxidant enzyme profile Sanction No:482/CCOST/05, dated 08.09.2006	CGCOST, Raipur	Rs 1.89 Lakh	2006-08
2.	ROS mediated lipid peroxidation, protein oxidation and DNA fragmentation in *Shorea robusta* seeds during natural ageing Sanction No:41-379/2012 (SR), dated July 16, 2012	UGC, New Delhi	Rs 4.25 Lakh	2012-15
3.	Telomere and genotoxic effects of Arsenic in germinating *Glycine max* L. seeds Sanction No: 2741/CCOST/MRP/2015, dated 24.03.2015	CGCOST, Raipur	Rs 5.00 Lakh	2015-17
4.	Assessment of efficacy of bacterial slurry (pro-biotic) as deterrent to diseases, pests (agro-bioterrorism), plant growth regulator and bio-fertilizer Sanction No: DRDE/TC/05414/Proj/ TASK-220/16, Dated June 27, 2016	DRDO, New Delhi	Rs 8.72 Lakh	2016-18

5.	Efficiency of encapsulated soil bacterial consortia in reducing Arsenic toxicity and growth promotion of *Oryza sativa* L. Sanction No: 2819/CCOST/MRP/2017, dated 27.11.2017	CGCOST, Raipur	Rs 5.00 Lakh	2017-20
6.	Bacterial bioreporters for detection of landmines vapors Sanction No: O/o DG9TM)/81/48222/ LSRB-323/BTB/2017, dt. 27.04.2018	DRDO, New Delhi	Rs 32.87 Lakh	2018-21
7.	Documentation of wetlands of the Chhattisgarh State Sanction No: Wetland/Sa N/6844, Dated 21.12.2018, and Wild-Life/Budget/18/6755, Dated 17.12.2018	CG Govt. Raipur	Rs 3.25 Lakh	2019
8.	Bioremediation and bioelectricity generation from effluent wastewater and kitchen waste in microbial fuel cell using indigenous bacterial strain(s) Sanction No: 2339/CCOST/MRP/2019, dated 29.01.2019	CGCOST, Raipur	Rs 5.00 Lakh	2019-22
9.	Formulation of super foods & beverages Sanction No: 5200003517, dated 11.03.2021	ITC, Bengaluru	Rs 2.48 Lakh	2021
10.	Traditional knowledge of medicinal plants consumed by primitive tribes of Bastar, Chhattisgarh: Development of database & strategy for value addition & sustainable livelihood via Fin-tech Sanction No: IBITF/Note/TSP/Sanction Letter /2023-24/0254, dated 14.11.2023	IIT-BITF, Bhilai, CG (DST, New Delhi)	Rs 40.23 Lakh	2023-25
11.	AI-driven financial empowerment: Fin-tech for all: Improving financial literacy & inclusion in the scheduled tribe community & development of an AI-based mobile application Sanction No: IBITF/Note/TSP/Sanction Letter /2023-24/0257, dated 15.11.2023	IIT-BITF, Bhilai, CG (DST, New Delhi)	Rs 133.00 Lakh	2023-24

Conference/ Symposia/ Workshop/ Seminar/ Course Organized:

1. National Symposium on Biodiversity: Current Status and Prospects, October 17-18, 2005.
2. National Conference on Advances in Biological Sciences, November 5-7, 2011.
3. National Conference on Traditional Knowledge and Biotechnology, November 22-24, 2013.
4. National Seminar on Innovations and Prospects in Biotechnology, January 2-4, 2016.
5. One Day Workshop on Opportunities and Entrepreneurship in Biotechnology, March 31, 2017.
6. One Day Workshop on Brewing Bio-entrepreneurship in Raipur, August 29, 2019.
7. National Conference on Recent Advances & Trends in Biotechnology, January 10-12, 2020.
8. Multidisciplinary Refresher Course in Life Sciences: Synthetic Biology, December 14-28, 2020.
9. Multidisciplinary Refresher Course in Biotechnology, December 13-28, 2021.
10. Vigyan Sarvatra Pujyate: A Festival of SCoPE for All, February 22-28, 2022.
11. National Conference on Science & Technology for Women Empowerment and Rural Development, October 13-14, 2023.
12. 28th State Level Children Science Congress, December 7-8, 2023.

13. One Day Workshop on Opportunities of Start-ups in Biotechnology, March 28, 2024.
14. One Day Science Promotion Activity, May 02, 2024.
15. Two Days Workshop on □□□□□□□ □□□□□ □□ □□□□□□: □□□□□□□□ □□□□□ □□□□□ □□ □□□ □□□□ □□ □□□□□□□□□□□ □□□ at Govt. Indaru Kenwat Girls College, Kanker, May 09-10, 2024.
16. National Seminar on Safeguarding Indigenous Knowledge of Medicinal Plants Used by Tribal Healers, November 06, 2024.

Guest/ Invited Lectures Delivered:

1. Conservation of plant genetic resources using vitrification-based cryopreservation. National Conference on Biological Sciences in Present Scenario, Department of Biotechnology, St. Thomas College, Bhilai, October 10 - 11, 2012.
2. Molecular markers of seed ageing. National Seminar on Recent Trends in the Thrust Areas of Life Sciences, Department of Bioscience, Sri Guru Tegh Bahadur Khalsa College, Jabalpur, January 10 - 11, 2015.
3. Molecular markers of heavy metal toxicity. National Seminar on Innovation and Research in Science, Management and Technology, Department of Microbiology and Computer Science, Bilaspur University, Bilaspur, March 29 - 30, 2015.
4. Prospects in Biotechnology and Zoology. Department of Biotechnology and Zoology, Govt. Digvijay College, Rajnandgaon, September 01, 2015.
5. Seeds: Fascinating vehicle of life. Refresher Course in Botany, Organized by Academic Staff College, Pt. Ravishankar Shukla University, Raipur, November 23, 2015.
6. Insights of electrophoresis and 2-DE. Refresher Course in Botany, Organized by Academic Staff College, Pt. Ravishankar Shukla University, Raipur, November 27, 2015.
7. Popular tools for data analysis: Conceptual outline. National Workshop on Research Methodology and Tools, Organized by Bilaspur University, Bilaspur, June 25 - 30, 2016.
8. Electrophoresis, an efficient separation technique. Department of Botany and Microbiology, Govt. Digvijay P.G. College, Rajnandgaon, November 10, 2016.
9. Chaired a technical session of National Seminar on Advances in Environmental Science and Technology, organized by Department of Botany, Govt. Digvijay P.G. College, Rajnandgaon, January 23 - 24, 2017.
10. Guest Lecture on Enzymes: Extraction to application. National Workshop on Enzymology and its Applications (Isolation, Purification and Immobilization of Enzymes Amylase and Lipase) from Various Sources, during National Workshop, Organized by Bhilai Mahila Mahavidyalaya, Bhilai, and Nitza Bioventure Pvt. Ltd., Secundarabad, January 12 - 18, 2018.
11. Chaired a technical session of National Seminar on Nanotechnology to Translational Nanomedicine: Status Assessment, Challenges and New Horizons, Organized by Institute of Pharmacy, Pt. Ravishankar Shukla University, Raipur, March 15 - 17, 2018.
12. Lecture on Heavy metal toxicity in plants and its management strategies. Refresher Course in Life Sciences, Organized by Human Resource Development Centre, Pt. Ravishankar Shukla University, Raipur, July 09, 2018.
13. Chaired a technical session of International Conference on Innovative Research in Science, Management and Technology, Organized by Bilaspur University, Bilaspur and MTMI Inc., USA, August 4 - 5, 2018.
14. Guest Lecture on Management of heavy metal toxicity in crop plants: Recent innovations, during National Conference on Research Interventions in Biotechnology and their Applications in Sustainable Resource Utilization, Organized by Rungta College of Science & Technology, Durg, September 07, 2018.
15. Resource Person for conducting a Workshop on RT-PCR, during International Conference on Fostering Interdisciplinary Research in Medicines, Organized by University Institute of Pharmacy, Pt. Ravishankar Shukla University, Raipur, January 19 - 21, 2019.

16. Resource Person for Quantitative Data Analysis, during Workshop *cum* Pre Ph.D. Course work on Research Methodology and Computing, organized by Atal Bihari Bajpayee University, Bilaspur, 25 May to 3 June, 2019.
17. Invited Lecture on Management of Heavy Metal Toxicity in Crops, during 2nd International Conference on Fostering Interdisciplinary Research in Health Sciences 2019, organized by AIMST University, Bedong, Kedah Dar, Malaysia, September 14 - 15, 2019.
18. Lecture on Heavy metal stress & its management for improved crop production. Refresher Course in Life Sciences, Organized by Human Resource Development Centre, Pt. Ravishankar Shukla University, Raipur, December 06, 2019.
19. Invited Lecture on Enzymes: Extraction to Applications, during National Seminar on Recent Advances & Current Trends in Life Sciences, organized by Govt. BSBA College, Dongargaon, February 13, 2020.
20. Invited Lecture on Molecular Markers of Seed Ageing, during International Conference on A New Microbiome Research Era for Human Welfare & Cure of Infectious Diseases, organized by Shri Shakaracharya Mahavidyalaya, Bhilai, February 28 - 29, 2020.
21. Invited Lecture on Approaches for Diagnosis and Management of Heavy Metal Toxicity for Improved Production, during One Day National Seminar on Recent Trends in Plant Sciences, organized by Sir Sayyed College of Arts, Commerce & Science, Aurangabad, Maharashtra, January 03, 2021.
22. Lecture on Planning and writing research projects, funding opportunities and involving students in research. Faculty Development Program, Organized by Human Resource Development Centre, Pt. Ravishankar Shukla University, Raipur, February 19, 2021.
23. Lecture on Research ethics, academic integrity, informed consent and conversion of thesis into publication ready paper. Faculty Induction Program, Organized by Human Resource Development Centre, Pt. Ravishankar Shukla University, Raipur, February 22, 2021.
24. Invited Lecture on Novel Strategies for Management of Metal Toxicity in Plants, during National Webinar on Future of Science, Technology and Innovation: Impacts on Education, Skills and Work, organized by Sri Guru Tegh Bahadur Khalsa College, Jabalpur, Madhya Pradesh, February 28 - March 02, 2021.
25. Invited Lecture on Biotechnological Interventions in Combating Water Scarcity Condition and for Food Security, during National Webinar on Need and Feasibility of Water Conservation, organized by Govt. Shivnath Science College, Rajnandgaon, June 19, 2021.
26. Invited Lecture on Post Harvest Processing, Storage and Deterioration, during Online Certificate Program on Seed Science and Technology, organized by Department of Botany, St. Thomas College, Bhilai, July 05-21, 2021.
27. Invited Lecture on Proteomics: Versatile Approach for Disease Diagnosis and Human Welfare, during 15 Days Certificate Course on Biostatistics, Internet Applications, Instrumentation and Techniques for Young Researchers, organized by Department of Microbiology, Swami Shree Swaroopanand Saraswati Mahavidyalaya, Hudco, Bhilai, July 15-29, 2021.
28. Invited Lecture on Novel Approaches for Managing Ill Effects of Heavy Metals in Plants, during International Conference on Sustainable Development and Recent Advances in Biotechnology and Bioscience, organized by Department of Biotechnology, Kalinga University, Naya Raipur, 22 October 2021.
29. Lecture on Effects of Heavy Metal Exposure in Plants and their Management Approaches. Refresher Course in Life Sciences, Organized by Human Resource Development Centre, Sant Ghadage Baba Amravati University, Amravati, Maharashtra, November 12, 2021.
30. Lecture on Seeds: Fascinating Vehicles of Life. Refresher Course in Life Sciences, Organized by Human Resource Development Centre, Sant Ghadage Baba Amravati University, Amravati, Maharashtra, November 12, 2021.
31. Lecture on Planning and writing research projects and funding opportunities. Faculty Development Program. Organized by Human Resource Development Centre, Pt. Ravishankar Shukla University, Raipur, July 19, 2022.

32. Lecture on Designing inter-disciplinary and collaborative research projects in specific disciplines. Faculty Development Program. Organized by Human Resource Development Centre, Pt. Ravishankar Shukla University, Raipur, July 22, 2022.
33. Lecture on How to prepare inter-disciplinary and collaborative research projects for funding. Five Day Online Research Enrichment Program. Organized by Research & Development Cell, Amity University Jharkhad, Ranchi, July 29, 2022.
34. Lecture on Planning and writing research projects and funding opportunities. Faculty Development Program. Organized by Human Resource Development Centre, Pt. Ravishankar Shukla University, Raipur, 13 September 2022.
35. Lecture on Designing inter-disciplinary and collaborative research projects in specific disciplines. Faculty Development Program. Organized by Human Resource Development Centre, Pt. Ravishankar Shukla University, Raipur, 14 September 2022.
36. Lecture on Heavy Metal Toxicity in Crop Plants: Symptoms, Management and Future Directions. Refresher Course in Life Sciences, Organized by Human Resource Development Centre, Sant Ghadage Baba Amravati University, Amravati, Maharashtra, 11 October 2022.
37. Lecture on Seeds: The Life Forms. Refresher Course in Life Sciences, Organized by Human Resource Development Centre, Sant Ghadage Baba Amravati University, Amravati, Maharashtra, 13 October 2022.
38. Lecture on Biotechnological Interventions for Food Security under Drought Condition. Refresher Course in Life Sciences, Organized by Human Resource Development Centre, Sant Ghadage Baba Amravati University, Amravati, Maharashtra, 21 October 2022.
39. Chaired a technical session of National Conference on Innovation and Emerging Novel Research in Plant Sciences, organized by Govt. VYT PG Autonomous College, Durg, Chhattisgarh, 17-18 January 2023.
40. Chaired a technical session of International Conference on Role of Applied Sciences in Social Implications, organized by Govt. Digvijay Autonomous PG College, Rajnandgaon, Chhattisgarh, 6-8 February 2023.
41. Chaired a technical session of National Seminar on Current Trends and Prospects in Botany, organized by Govt. Nagarjuna PG Autonomous College of Science, Raipur, Chhattisgarh, 16-17 February 2023.
42. Lecture on Criteria V of NAAC Template, during Two Days Online NAAC Awareness Workshop for Accredited and Non-Accredited Colleges and Universities, organized by IQAC of Atal Bihari Vajpayee University, Bilaspur, Chhattisgarh, 18-19 May, 2023.
43. Lecture on Plagiarism and Research Ethics, during One-Week Online Faculty Development Program on "Art of Writing Research Papers", jointly organized by Academic & Administrative Development Centre, Atal Bihari Vajpayee University, Bilaspur, Chhattisgarh, and Association of Indian Universities, New Delhi, 22-27 May, 2023.
44. Resource Person/ Delivered Lecture on Understanding Ecosystem for Health & Well Being, in the State Level Workshop for Mentors and Guide Teachers of School pertaining to 31 National Children Science Congress 2023, organized by Chhattisgarh Council of Science & Technology, Raipur, Chhattisgarh, 08 August 2023.
45. Lecture on Conducting Discipline Specific Research. Faculty Induction Program. Organized by HRDC, Pt. Ravishankar Shukla University, Raipur, 29 September 2023.
46. Lecture on Designing inter-disciplinary and collaborative research projects in specific discipline. Faculty Induction Program-Gurudakshta. Organized by Human Resource Development Centre, Pt. Ravishankar Shukla University, Raipur, 09 January 2024.
47. Delivered a Key Note Lecture on Electrophoresis: History, types and applications, during National Workshop *cum* Faculty Development Program on Instrumentation and Analytical Techniques of Research. Organized by Govt. Digvijay Autonomous College, Rajnandgaon, 24-31 January 2024.
48. Lecture on Contributions of Biotechnology for Food Security under Climate Change. Refresher Course in Life Science, Organized by MMTTC, Pt. Ravishankar Shukla University, Raipur, 29 January 2024.

49. Lecture on Conducting Discipline Specific Research. Faculty Induction Program. Organized by MMTTC, Pt. Ravishankar Shukla University, Raipur, 30 January 2024.
50. Delivered a Plenary Lecture on Microorganisms: Bio-reporter, eco-cleaner, productivity enhancer and nutrient provider, during National Conference on Microbial Bioprospecting-Exploration and Conservation. Jointly organized by Department of Microbiology, Govt. VYT PG College, Durg, and Microbiologist Society of India. 5-6 February 2024.
51. Resource Person at Aavishkaar 2024. Organized by Sanjay Rungta Group of Institutions, Kohka Kurud Road, Bhilai, 23 February, 2024.
52. Delivered an Invited Lecture on "Microbes: Threat reporter, eco-cleaner and yield booster, during International Conference on Future Aspects of Science & Technology, organized by Faculty of Science, Kalinga University, Raipur, 3-4 April, 2024.
53. Delivered an Invited Lecture on Research Ethics, Academic Honesty and Integrity, during Two Weeks Workshop on Research Methodology & Computing, organized by Atal Bihari Vajpayee University, Bilaspur, 5-18 June, 2024.
54. Lecture on Contributions of Biotechnology for Maintaining Food Security during Climate Change. Refresher Course in Basic Science. Organized by MMTTC, Rani Durgawati University, Jabalpur, 27 August 2024.
55. Invited Lecture on Food Security and Changing Climatic Conditions. International Seminar on Modern Aspects of Science & Technology. Organized by Govt. DB Girls PG College, Raipur, Chhattisgarh, 17-18 October 2024.
56. Chaired a technical session of 3rd International Conference on Role of Science, Technology, Management and Social Science in Viksit Bharat-2047, Organized by Sant Gahira Guru University, Sarguja, Ambikapur, Chhattisgarh, 09-10 January 2025.
57. Chaired a technical session of CME on Interdisciplinary Research: Shaping the Healthcare of the Future, organized by Department of Biochemistry, AIIMS, Chhattisgarh, 30 January 2025.
58. Invited Lecture on Resuscitation of Aged Seeds via Nanoparticles. National Conference on Emerging Horizons in Biological Sciences, Organized by Govt. VYT PG Autonomous College, Durg, Chhattisgarh, 7-8 February 2025.
59. Invited Lecture on Chromatography: Separating mixture with precision. Seven Days Workshop on Research Methodology, Organized by Govt. Digvijay Autonomous College, Rajnandgaon, Chhattisgarh, 5-13 February 2025.
60. Lecture on Conducting Discipline Specific and Inter Disciplinary Research. Faculty Induction Program: Gurudakshta. Organized by MMTTC, Pt. Ravishankar Shukla University, Raipur, 14 February 2025.
61. Lecture on Designing Discipline Specific and Inter Disciplinary Research Project Proposal. Faculty Induction Program: Gurudakshta. Organized by MMTTC, Pt. Ravishankar Shukla University, Raipur, 15 February 2025.
62. Invited Lecture on Research Methodology and Research Problem, in a Faculty Development Program. Organized by Govt PG College, Jagdalpur, Chhattisgarh, 17 March 2025.
63. Invited Lecture on Revitalization of Aged Seeds through Nanomaterials, in a Lecture Series Organized by Govt. DB Girls PG Autonomous College, Raipur, Chhattisgarh, 20 March 2025.
64. Invited Lecture on Research Paper Writing and Publication Ethics, in a One Day State Level Workshop on "Research Writing, Publication Ethics and IPR", organized by Sant Guru Ghasidas Govt. PG College, Kurud, Chhattisgarh, 22 March 2025.
65. Keynote Lecture on Contributions of Biotechnology in Maintaining Food Security, in the National Conference on Recent Trends in Life Sciences, Organized by Swami Atmanand Govt. English Medium Model College, Somni, Rajnandgaon, Chhattisgarh, 12 April 2025.

Events Attended in Abroad:

1. 7th International Workshop on Desiccation Sensitivity and Tolerance Across Life Forms. Organized by School of Life Sciences, University of Kwazulu-Natal, Durban, South Africa, at Aquila Private Game Reserve, Cape Town, South Africa, January 10-15, 2016.

2. 2nd International Conference on Fostering Interdisciplinary Research in Health Sciences 2019, organized by AIMST University, Bedong, Kedah Dar, Malaysia, September 14-15, 2019.

Publications:

Research/ Review Papers:

1. KS Krishna Chaitanya, **S. Keshavkant** & SC Naithani (2000) Changes in total protein and protease in dehydrating recalcitrant sal *(Shorea robusta)* seeds. *Silva Fennica*, 34: 71-77. **{SCI IF: 1.68}**
2. **S. Keshavkant** & SC Naithani (2001) Chilling-induced oxidative stress in young sal *(Shorea robusta)* seedlings. *Acta Physiologae Plantarum*, 23: 457-466. **{SCI IF: 2.35}**
3. **S. Keshavkant** & SC Naithani (2005) Low temperature induced alteration in growth pattern and mortality in young sal (*Shorea robusta*) seedlings. *Journal of Tree science***,** 24: 69-78. **{NAAS IF: 1.0}**
4. R Naithani, B Varghese, **S. Keshavkant**, ME Dulloo & SC Naithani (2006) Post harvest storage physiology of *Gmelina arborea* seeds. *Indian Journal of Plant Physiology*, 11: 20-27. **{NAAS IF: 5.50}**
5. **S. Keshavkant** & SC Naithani (2007) Changes in sugar metabolism in response to chilling in *Shorea robusta* seedlings. *International Journal of Plant Sciences*, 2: 161-168. **{NAAS IF: 2.2}**
6. **S. Keshavkant** & SC Naithani (2007) Low temperature induced changes in the Phenolic contents and its regulatory enzymes in sal seedlings. *Indian Journal of Plant Physiology***,** 12: 146-152. **{NAAS IF: 5.50}**
7. PK Sharma, M Kukreja, **S. Keshavkant** & R Gothalwal (2007) Taxoethanobotanical values of some plants of Chhattisgarh. *Advances in Biological Sciences***,** 6: 37-38.
8. PK Sharma & **S. Keshavkant** (2008) Farm production of *Trichoderma harzianum* T-64 using different organic materials from Hilly Zones of Chhattisgarh. *Advances in Plant Sciences***,** 21: 39-41. **{NAAS IF: 2.90}**
9. PK Sharma & **S. Keshavkant** (2008) Comparative study of antagonistic activity of *Trichoderma species* against *Rhizoctonia solanii*. *International Journal of Plant Sciences***,** 3: 163-165. **{NAAS IF: 7.0}**
10. S Sharma, R Naithani, B Varghese, **S. Keshavkant** & SC Naithani (2008) Effect of hot water treatment on seed germination of some fast-growing tropical tree species. *Journal of Tropical Forestry***,** 24: 49-52. **{NAAS IF: 4.16}**
11. **S. Keshavkant**, T Sukhdev, Ch Srinivasarao & SC Naithani (2008) Antioxidant activities, phenols and flavonoid contnets of *Withania somnifera* and *Rauwolfia serpentina*. *Indian Journal of Plant Physiology***,** 13: 394-399. **{NAAS IF: 5.50}**
12. **S. Keshavkant** & SC Naithani (2010) Chilling induced superoxide production, lipid peroxidation and leakage loss in *Shorea robusta* seedlings. *Indian Journal of Plant Physiology***,** 15: 191-196. **{NAAS IF: 5.50}**
13. **S. Keshavkant**, J Padhan, S Parkhey & SC Naithani (2012) Physiological and antioxidant responses of germinating *Cicer arietinum* seeds to salt stress. *Russian Journal of Plant Physiology***,** 59 (2): 206-211. **{SCI IF: 1.48}**
14. Suruchi Parkhey, SC Naithani & **S. Keshavkant** (2012) ROS production and lipid catabolism in desiccating *Shorea robusta* seeds during natural ageing. *Plant Physiology and Biochemistry***,** 57: 261-267. **{SCI IF: 5.43}**
15. Suruchi Parkhey, SC Naithani & **S. Keshavkant** (2014) Protein metabolism during natural ageing in desiccating recalcitrant seeds of *Shorea robusta*. *Acta Physiologae Plantarum***,** 36: 1649-1659. **{SCI IF: 2.35}**
16. Suruchi Parkhey, Mamta Tandon & **S. Keshavkant** (2014) Salicylic acid and acquisition of desiccation tolerance in *Pisum sativum* seeds. *Biotechnology*, 13: 217-225. {**SCOPUS Indexed Journal**}

17. Jipsi Chandra, Mona Tandon & **S. Keshavkant** (2015) Increased rate of drying reduces metabolic inequity and critical water content in radicles of *Cicer arietinum* L. *Physiology and Molecular Biology of Plants*, 21: 215-223. {**SCI IF: 2.39**}
18. Gunjan Rughani, Jipsi Chandra, Vibhuti Chandrakar & **S. Keshavkant** (2015) Lipid peroxidation and *in-situ* localization of ROS in assorted seeds exposed to salinity and artificial ageing. *Applied Science Reports*, 12: 123-127.
19. Suruchi Parkhey, Vibhuti Chandrakar, SC Naithani & **S. Keshavkant** (2015) Efficient extraction of proteins from recalcitrant plant tissue for subsequent analysis by two-dimensional gel electrophoresis. *Journal of Separation Science*, 38: 3622-3628. {**SCI IF: 3.64**}
20. Ravishankar Chauhan, Afaque Quraishi, S. K. Jadhav and **S. Keshavkant** (2016) A comprehensive review on pharmacological properties and biotechnological aspects of Genus *Chlorophytum*. *Acta Physiologae Plantarum***,** 38: 116 (DOI: 10.1007/s11738-016-2132-8). **{SCI IF: 2.35}**
21. Gunjan Rughani, Jipsi Chandra, Vibhuti Chandrakar & **S. Keshavkant** (2016) Production and *in situ* localization of ROS in *Pennisetum typhoideum* indulged with heavy metal stress. *CSVTU International Journal of Biotechnology, Bioinformatics and Biomedical*, 1: 8-13.
22. Ravishankar Chauhan, **S. Keshavkant**, S. K. Jadhav & Afaque Quraishi (2016) *In vitro* slow growth storage of *Chlorophytum borivilianum* Sant et Fernand: a critically endangered herb. *In Vitro Cellular and Developmental Biology- Plant*, DOI: 10.1007/s11627-016-9756-7. {**SCI IF: 2.25**}
23. Vibhuti Chandrakar, SC Naithani & **S. Keshavkant** (2016) Arsenic-induced metabolic disturbances and their mitigation mechanisms in crop plants: A review. *Biologia*, 71: 367-377. {**SCI IF: 1.35**}
24. Jipsi Chandra & **S. Keshavkant** (2016) Physiological and biochemical changes during seed development and maturation in *Madhuca latifolia* Roxb. *Bangladesh Journal of Botany*, 45: 335-343. {**SCI IF: 0.35**}
25. Bhumika Yadu, Vibhuti Chandrakar & **S. Keshavkant** (2016) Responses of plants towards fluoride: an overview of oxidative stress and defense mechanisms. *Fluoride*, 49: 293-302. {**SCI IF: 1.34**}
26. Bhumika Yadu & **S. Keshavkant** (2016) Fluoride-induced abnormalities and its modulation in *Cajanus cajan* L. *Deccan Current Science*, 15: 99-105.
27. Roseline Xalxo & **S. Keshavkant** (2016) Simulated acid rain enforced ramifications in *Trigonellafoenum graecum* seedlings. *Deccan Current Science*, 15: 106-112.
28. Shweta N., Sneha Kulbhaje & **S. Keshavkant** (2016) Toxicity of single and joint application of metalloid and insecticides on soil dehydrogenase enzyme. *Deccan Current Science*, 15: 113-121.
29. Vibhuti Chandrakar, Amit Dubey & **S. Keshavkant** (2016) Modulation of antioxidant enzymes by salicylic acid in arsenic exposed *Glycine max* L. *Journal of Soil Science & Plant Nutrition*, 16: 662-676. {**SCI IF: 3.87**}
30. Shrishti Yadu, Teman Lal Dewangan, Vibhuti Chandrakar & **S. Keshavkant** (2017) Imperative roles of salicylic acid and nitric oxide in improving salinity tolerance in *Pisum sativum* L. *Physiology and Molecular Biology of Plants*, 23: 43-58. {**SCI IF: 2.39**}
31. Vibhuti Chandrakar, Bhumika Yadu, Rakesh Kumar Meena, Amit Dubey & **S. Keshavkant** (2017) Arsenic-induced genotoxic responses and their amelioration by diphenylene iodonium, 24-epibrassinolide and proline in *Glycine max* L. *Plant Physiology and Biochemistry*, 112: 74-86. **{SCI IF: 5.43}**
32. Sneha Kulbhaje, N. Shweta & **S. Keshavkant** (2017) Metalloid and insecticides-induced modifications in the key soil enzymes regulating biogeochemical cycling. *Journal of Applied Environmental and Biological Sciences*, 7: 52-61. {**SCOPUS Indexed journal**}
33. Bhumika Yadu, Vibhuti Chandrakar, Rakesh Kumar Meena & **S. Keshavkant** (2017) Glycinebetaine reduces oxidative injury and enhances fluoride stress tolerance via

improving antioxidant enzymes, proline and genomic template stability in *Cajanus cajan* L. *South African Journal of Botany*, 111: 68-75. {**SCI IF: 3.11**}

34. Vibhuti Chandrakar, Suruchi Parkhey, Amit Dubey & **S. Keshavkant** (2017) Modulation in arsenic-induced lipid catabolism in *Glycine max* L. using proline, 24-epibrassinolide and diphenylene iodonium. *Biologia*, 72: 292-299. {**SCI IF: 1.35**}
35. Roseline Xalxo, Bhumika Yadu, Piu Chakraborty, Vibhuti Chandrakar & **S. Keshavkant** (2017) Modulation of nickel toxicity by glycinebetaine and aspirin in *Pennisetum typhoideum*. *Acta Biologica Szegediensis*, 61: 163-171. {**RG IF: 0.44**}
36. Roseline Xalxo & **S. Keshavkant** (2017) Acid rain-induced oxidative stress regulated metabolic interventions and their amelioration mechanisms in plants. *Biologia*, 72: 1387-1393. {**SCI IF: 1.35**}
37. Vibhuti Chandrakar & **S. Keshavkant** (2017) Increasing *Glycine max* L. tolerance to arsenic stress through exogenous aspirin and tiron. *Central European Journal of Experimental Biology*, 5: 23-29.
38. Jipsi Chandra & **S. Keshavkant** (2018) Desiccation-induced ROS accumulation and lipid catabolism in recalcitrant *Madhuca latifolia* seeds. *Physiology and Molecular Biology of Plants*, 24: 75-87. {**SCI IF: 2.39**}
39. Jipsi Chandra, Suruchi Parkhey & **S. Keshavkant** (2018) Ageing-regulated changes in genetic integrity of two recalcitrant seeded species having contrasting longevity. *Trees: Structure and Function*, 32: 109-123. {**SCI IF: 2.52**}
40. Ravishankar Chauhan, **S. Keshavkant** & Afaque Quraishi (2018) Enhanced production of diosgenin through elicitation in micro-tubers of *Chlorophytum borivilianum* Sant et Fernand. *Industrial Crops and Products*, 113: 234-239. {**SCI IF: 5.64**}
41. Vibhuti Chandrakar & **S. Keshavkant** (2018) Growth and metabolic responses of *Glycine max* L. to arsenate and arsenite: a comparative assessment. *Bangladesh Journal of Botany*, 47: 105-113. {**SCI IF: 0.35**}
42. Vibhuti Chandrakar, Amit Dubey & **S. Keshavkant** (2018) Modulation of arsenic-induced oxidative stress and protein metabolism by diphenyleneiodonium, 24-epibrassinolide and proline in *Glycine max* L. *Acta Botanica Croatica*, 77: 51-61. {**SCI IF: 1.05**}
43. Bhumika Yadu, Vibhuti Chandrakar, Jyoti Korram, Manmohan L. Satnami, Meetul Kumar & **S. Keshavkant** (2018) Silver nanoparticle modulates gene expressions, glyoxalase system and oxidative stress markers in fluoride stressed *Cajanus cajan* L. *Journal of Hazardous Materials*, 353: 44-52. {**SCI IF: 14.22**}
44. Bhumika Yadu, Vibhuti Chandrakar, Rakesh Kumar Meena, Aditi Poddar, & **S. Keshavkant** (2018) Spermidine and melatonin attenuate fluoride toxicity by regulating gene expression of antioxidants in *Cajanus cajan* L. *Journal of Plant Growth Regulation*, 37: 1113-1126. {**SCI IF: 4.16**}
45. Vibhuti Chandrakar & **S. Keshavkant** (2018) Nitric oxide and dimethylthiourea up-regulates pyrroline-5-carboxylate synthetase expression to improve arsenic tolerance in *Glycine max* L. *Environmental Progress and Sustainable Energy*, DOI: 10.1002/ep.12978. {**SCI IF: 2.43**}
46. Roseline Xalxo & **S. Keshavkant** (2018) Hydrolytic enzymes mediated lipid-DNA catabolism and altered gene expression of antioxidants under combined application of lead and simulated acid rain in Fenugreek (*Trigonella foenum graecum* L.) seedlings. *Ecotoxicology*, DOI: 10.1007/s10646-018-1996-3 {**SCI IF: 2.82**}
47. Roseline Xalxo & **S. Keshavkant** (2019) Melatonin, glutathione and thiourea attenuates lead and acid rain-induced deleterious responses by regulating gene expression of antioxidants in *Trigonella foenum graecum* L. *Chemosphere*, 221: 1-10. {**SCI IF: 8.94**}
48. Bhumika Yadu, Vibhuti Chandrakar, Richa Tamboli & **S. Keshavkant** (2019) Dimethylthiourea antagonizes oxidative responses by up-regulating expressions of pyrroline-5-carboxylate synthetase and antioxidant genes under arsenic stress. *International Journal of Environmental Science & Technology*, DOI: 10.1007/s13762-019-02234-5. {**SCI IF: 3.10**}

49. Jipsi Chandra, Sershen, Boby Varghese & **S. Keshavkant** (2019) The potential of ROS inhibitors and hydrated storage in improving the storability of recalcitrant *Madhuca latifolia* seeds. *Seed Science & Technology*, 47: 33-45. {**SCI IF: 0.91**}
50. Neha Pandey & **S. Keshavkant** (2019) Characterization of arsenic resistant plant-growth promoting indigenous soil bacteria isolated from Centre-East regions of India. *Journal of Basic Microbiology*, DOI: 10.1002/jobm.201800658. {**SCI IF: 3.10**}
51. Neha Pandey, Kiragandur Manjunath & **S. Keshavkant** (2020) Screening of plant growth promoting attributes and arsenic remediation efficacy of bacteria isolated from agricultural soils of Chhattisgarh. *Archives of Microbiology*, 202: 567-578. DOI: 10.1007/s00203-019-01773-2. {**SCI IF: 2.80**}
52. Jipsi Chandra, Ritambhara Chauhan, Jyoti Korram, Manmohan L. Satnami & **S. Keshavkant** (2020) Silica nanoparticle minimizes aluminium imposed injuries by impeding cytotoxic agents and over expressing protective genes in *Cicer arietinum*. *Scientia Horticulturae*, 260: 108885. {**SCI IF: 4.30**}
53. Jipsi Chandra, Mahima Dubey & **S. Keshavkant** (2020) Influence of protein damage and proteasome gene expression in longevity of recalcitrant *Madhuca latifolia* Roxb. seeds. *Botany*, DOI: 10.1139/cjb-2019-0130. {**SCI IF: 1.32**}
54. Priya Katiyar, Bhumika Yadu, Jyoti Korram, Manmohan L. Satnami, Meetul Kumar & **S. Keshavkant** (2020) Titanium nanoparticles attenuate arsenic toxicity by up-regulating expressions of defensive genes in *Vigna radiata* L. *Journal of Environmental Science*, 92: 18-27. {**SCI IF: 6.90**}
55. Priya Katiyar, Neha Pandey & **S. Keshavkant** (2020) Biological approaches of fluoride remediation: potential for environmental clean-up. *Environmental Science & Pollution Research*, DOI: 10.1007/s11356-020-08224-2. {**SCI IF: 5.80**}
56. Roseline Xalxo & **S. Keshavkant** (2020) Growth and antioxidant responses of *Trigonella foenum-graecum* L. seedlings to lead and simulated acid rain exposure. *Biologia*, DOI: 10.2478/s11756-020-00478-y. {**SCI IF: 1.50**}
57. Jipsi Chandra, Suruchi Parkhey, Dalia Varghese, Sershen, Boby Varghese & **S. Keshavkant** (2020) Aluminium rhizotoxicity in *Cicer arietinum*. *Russian Journal of Plant Physiology***,** 67: 945-952. **{SCI IF: 1.48}**
58. Vibhuti Chandrakar, Bhumika Yadu, Jyoti Korram, Manmohan L. Satnami, Amit Dubey, Meetul Kumar & **S. Keshavkant** (2020) Carbon dot induces tolerance to arsenic by regulating arsenic uptake, reactive oxygen species detoxification and defense-related gene expression in *Cicer arietinum* L. *Plant Physiology and Biochemistry*, 156: 78-86. **{SCI IF: 6.50}**
59. Jeabunnisha Khan, Jipsi Chandra, Roseline Xalxo, Jyoti Korram, Manmohan L. Satnami & **S. Keshavkant** (2020) Amelioration of ageing associated alterations and oxidative inequity in seeds of *Cicer arietinum* by silver nanoparticles. *Journal of Plant Growth Regulation*, 40: 1341-1351. {**SCI IF: 4.80**}
60. Rasleen Kaur, Jipsi Chandra & **S. Keshavkant** (2021) Nanotechnology: An efficient approach for rejuvenation of aged seeds. *Physiology and Molecular Biology of Plants*, DOI: org/10.1007/s12298-021-00942-2. {**SCI IF: 3.50**}
61. Jipsi Chandra & **S. Keshavkant** (2021) Mechanisms underlying the phytotoxicity and genotoxicity of aluminum and their detoxification strategies: A review. *Chemosphere*, 278: 130384. {**SCI IF: 8.94**}
62. Ravishankar Chauhan, Vikram Singh, **S. Keshavkant** & Afaque Quraishi (2021) Vitrification based cryopreservation of *in vitro* grown apical meristems of *Chlorophytum borivilianum* Sant et Fernand: a critically endangered species. *Proceedings of the National Academy of Sciences, India: Section-B: Biological Sciences*, DOI: org/10.1007/s40011-021-01260-z. {**SCI IF: 0.396**}
63. Deepali Nagre, Roseline Xalxo, Vibhuti Chandrakar & **S. Keshavkant** (2021) Impact of melatonin on growth and antioxidant activity of *Cicer arietinum* L. grown under arsenic stress. *Journal of Ravishankar University B-Science*, 34: 69-79.

64. Jipsi Chandra, Sershen, Boby Varghese & **S. Keshavkant** (2021) Towards understanding the basis of desiccation-induced oxidative stress in recalcitrant seeds: The case of *Madhuca latifolia* Roxb. *South African Journal of Botany*, 142: 100-105. {**SCI IF: 3.11**}
65. Anita Bhoi, Bhumika Yadu & **S. Keshavkant** (2021) Contribution of strigolactone in plant physiology, hormonal interaction and abiotic stresses. *Planta*, 254: 28. {**SCI IF: 4.30**}

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Brief Review of the Research Contributions:

The foremost focus of our research team involves the study of abiotic stress mediated physiological, biochemical and molecular changes in germinating seeds as well as seedlings of various crops. Our group is also attempting to explore the exact molecular mechanisms of active oxygen species {AOS} induced alterations occurring in various macromolecules *viz.*; lipids, proteins and nucleic acids, during post-harvest storage of seeds, more particularly of recalcitrants. We have further extended our interest in unraveling and elucidating the basic mechanisms of salt and heavy metal imposed molecular disturbances in germinating seeds of some of the crops. After conducting a good number of studies, we have come out with a conclusion that AOS are the potential responsible molecules conferring disorders in both biomolecules and plasma membrane of a cell, under salt and heavy metal induced stresses in seeds/ seedlings. Keeping in mind, our group has successfully ameliorated the toxic effects of salinity and heavy metals/ metalloids following the use of few of the potential chemicals and chemically synthesized silver, silica and titanium nanoparticles in some of the plant species.

Our research group, for the first time, has demonstrated that low temperature was the foremost cause responsible for inducing dieback (for 3-20 years) in majority [80%] of the sal (*Shorea robusta*] seedlings, a tree species of largest forest cover [44%] in India. This knowledge was applied to develop and standardize the tailor-made nursery practices for sal using plant growth regulators. We are now attempting to identify the low-temperature regulated genes/ proteins those are perhaps involved for dieback in sal seedlings and contribute in its being robust[a]. The Chhattisgarh being

the herbal state of India, we have also initiated work on potential molecules of healing herbs. Our work on *Withania somnifera* and *Rauwolfia serpentina* revealed exceptionally high levels of some of the important antioxidants. Work is in progress to establish the relationship between antioxidants of these herbs and their medicinal importance in the selected diseases.

Further, looking to the commercial as well as medicinal importance, and uneven harvesting of *Chlorophytum borivilianum*, one of the very important medicinal herbs for extraction of active gradients, our research group has successfully developed efficient *in-vitro* propagation protocol, slow growth protocol for long term storage of *in vitro* cultures, cryopreservation protocol and procedure for enhanced production of secondary metabolite in it.

In addition, our group has also conducted extensive research on bioremediation of arsenic, fluoride and pesticides like cypermethrin and chlorpyrifos. Conducted work dealt with the isolation and identification/ characterization of arsenic, cypermethrin and chlorpyrifos resistant bacterial strains from soil samples of Central India, and study of their efficacies to remove/ degrade these contaminants under *in vitro* conditions. Efforts have also been made to understand the fate of arsenic and fluoride, separately, in bacteria in an attempt to find applications in treating metal toxicity-induced alterations in metabolism of Rice plant.

Moreover, the undersigned has been received an assignment/ established an Industrial Collaboration with the Life Sciences & Technology Centre, ITC Limited, Bangalore, Karnataka, for testing and development of a few of the nutraceutical products. Apart, my group has successfully developed plant bioactive loaded nano-formulations for precise and site directed release of drugs for efficient management of *Rheumatoid arthritis*.

Now, at this moment we are attempting to develop navigated liposomes based, and bioactive loaded formulations for the management of oral squamous cell carcinoma and diabetic wound, respectively. Additionally, in another project, we are trying to use wheat straw as efficient raw material for the production of single cell protein which can probably be used as feed for the cattle's and poultry, and for the production of bioplastics.

(Keshav Kant Sahu)
20 April 2025