



Dr. Krishna Kant Sharma

(Assistant Professor)

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Teaching and Research experience:

- Assistant Professor in Department of Microbiology, Maharshi Dayanand University, Rohtak (since 24th February, 2010).
- Research Associate (1st September, 2007 to 22nd February, 2010) Department of Microbiology, University of Delhi South Campus, New Delhi-110021.
- Technical Assistant (September, 2001 to July, 2002), Worked one year on “Molecular Markers” CGMCP, Dept. of Genetics, University of Delhi South Campus, New Delhi-110021.

Academic Qualification:

Ph.D (2008) entitled “**Screening, Production, Structural properties, Molecular characterization and application of Laccase from *Ganoderma* sp-rckk02**”

Department of Microbiology, University of Delhi South Campus, New Delhi-110021.

M.Sc. (2001) Environmental Biology, University of Delhi South Campus, New Delhi-110021.

Other Qualification if any:

Diploma in Computer Science (one year)

Work Experiences:

1. One year dissertation (MSc) from Indian Institute of Technology (IIT), Department of Biochemical Engineering and Biotechnology, New Delhi; on “Biodegradation of Plastics”

2. Worked as a JRF in a DBT funded project entitled “Scale up.....Biotechnological application”, University of Delhi South Campus, New Delhi-110021.
3. Worked as a SRF in a MoEF, AICOPTAX Project on the “Diversity of gram positive bacteria”, University of Delhi South Campus, New Delhi-110021.
4. Worked as a ‘Research Associate’ in a DBT funded project entitled “Microbial Production of Biotech Feed..... Recombinant DNA technology”, University of Delhi South Campus, New Delhi-110021.

Symposium/Seminars/Workshop participated:

1. Participated in the 15 days DBT funded workshop entitled ‘Classical and Molecular Taxonomy of Fungi’, MTCC, IMTECH, Chandigarh and CBS, Netherlands.
2. Presented poster in International Conference on “Microbial Diversity: Current Perspective and Potential application”
3. Presented poster in Annual Conference of AMI-2006, Hyderabad, entitled “*Agrobacterium*-mediated delivery of marker genes to *Phanerochaete chrysosporium* mycelial pellets, A model transformation system for white-rot fungi” and was awarded as a best appreciated poster
4. Participated in the workshop on the ‘Developments in Bacterial Diversity and Systematics’ organized by University of Delhi South Campus, New Delhi 110021, India.
5. Participated in the workshop on confocal microscopy (2010), Leica and hands on practice on the instrument, University of Delhi South Campus, New Delhi.

Symposium/Seminars/Workshop Organized:

- Organizing Secretary, One day Seminar on 23rd April, 2011 on “*Intellectual Property: Creation and Protection*” at Department of Microbiology, M.D. University, Rohtak.
- Organizing Secretary, 1st National Seminar on “Microbes and Resource Management” on 22nd October, 2011 at Deptt. of Microbiology, M.D. University, Rohtak
- Organizing Secretary, 2nd National Seminar on “Microbes in Human Welfare” on 24th March, 2012 at Deptt. of Microbiology, M.D. University, Rohtak
- Organizing Secretary, National Research Colloquium cum Workshop on “Microbes in Food, Energy and Environment: Its importance and Future

Prospect" (MFEE-2016) on 2nd April, 2016 at Deptt. of Microbiology, M.D. University, Rohtak

Paper Presented:

1. Presented a paper in an Indo-Danish workshop held at Hyderabad Central University, organized by Department of Biotechnology, Ministry of Science and Technology, New Delhi, India; entitled "Recombinant DNA technology for improving lignin degradation vis-à-vis animal feed upgradation"
2. Presented a paper in a national workshop at IVRI, Izatnagar, entitled "Recombinant-DNA technology in animal feed development".

Invited Lecture/Workshop:

1. Invited lecture on "Agrobacterium mediated genetic transformation of biotechnologically important white-rot fungi" at ICMPB-2012, Banaras Hindu University, Varanasi.
2. Invited key note lecture on "Second generation biofuels: A global scenario" at International Seminar on Renewable Energy for Institutions and Communities in Urban and Rural Settings, Manav Institute, Jevra, Hissar.
3. Invited as a resource person in a workshop entitled "Microbial Diversity: Exploration and Perspective" from 3 -12 May, 2012, organized by Department of Environmental Sciences, M. D. University, Rohtak.
4. Extension lecture, entitled "Protein Folding Predictions to study Laccase: A Moonlighting Protein" CBLU, Bhiwani, Haryana
5. Guest lecture, 1. Somatic hybridization; 2. Genome organization; 3. Gene therapy; CBLU, Bhiwani, Haryana.

Member of National/International scientific societies:

- Life member of "The Association of Microbiologist of India (AMI)"
- Life member "Indian Science Congress"

Research Projects Awarded/Completed/Ongoing:

S. No.	Name of the Research Project (Minor/ Major)	Amount of the Research Project	Funding Agency	Period	Status of the Project
1.	Concomitant production of multiple enzymes, scale up and application in the deinking of news paper pulp	25 lakh	CSIR	2012-15	complete
2.	Production, cloning and characterization of laccase from soil bacteria	13 lakh	UGC	2011-16	complete
3.	Molecular screening for the existence of laccase gene family in different white rot fungi	23 lakh	DST	2012-15	complete
4.	Isolation and characterization of bioactive molecules from Microbes and Plant (Co-ordinated project)	200 lakh	DBT	2011-17	ongoing
5.	Molecular insight into the emerging antibiotic resistance pattern of <i>Vibrio cholera</i> (Co. P.I)	9.79 lakh	DRDO	2016-19	ongoing
6.	Development of an ideal pretreatment and saccharification process for rice straw using microbial cellulase (Co. P.I)	9.25 lakh	DST-Haryana	2017-2019	ongoing

Research Supervision:

S. No.	Students	Number of Students Supervised/Mentored	Status
1.	PhD	2	Thesis submitted: 2 Ongoing:3
2.	MSc	23	Supervised: 18 Ongoing: 5
3.	National Post-Doctoral Fellow (DST-SERB)	1	Ongoing

Publications:

1. Kumar A, Singh D, **Sharma KK**, Arora S, Singh AK, Gill SS and Singhal B (2017) Gel-Based Purification and Biochemical Study of Laccase Isozymes from

- Ganoderma* sp. and Its Role in Enhanced Cotton Callogenesis. Front. Microbiol. 8:674. doi: 10.3389/fmicb.2017.00674
2. Gill SS, Gill R, Trivedi DK, Anjum NA, **Sharma KK**, Ansari MW, Ansari AA, Johri AK, Prasad R, Pereira E, Varma A and Tuteja N (2016) *Piriformospora indica*: Potential and Significance in Plant Stress Tolerance. Frontiers in Microbiology. 7:332. doi: 10.3389/fmicb.2016.00332.
 3. Chutani, P and **Sharma, K. K.** (2016) Concomitant production of xylanases and cellulases from *Trichoderma longibrachiatum* MDU-6 selected for the deinking of paper waste. Bioprocess and Biosystem Engineering. 39: 747-758.
 4. Singh, D., Rawat, S., Waseem, M., Gupta, S., Lynn, A., Nitin, M., Ramchiary, N., **Sharma, K.K.** (2016) Molecular modeling and simulation studies of recombinant laccase from *Yersinia enterocolitica* suggests significant role in the biotransformation of non-steroidal anti-inflammatory drugs. Biochemical and Biophysical Research Communication. 469(2):306-312.
 5. **Sharma, K.K** (2016) Fungal Genome Sequencing: Basic Biology to Biotechnology. Critical Reviews in Biotechnology. 36(4):743-759.
 6. Chutani, P and **Sharma, K. K.** (2015) Biochemical evaluation of xylanases from various filamentous fungi and their application for the deinking of ozone treated newspaper pulp. Carbohydrate Polymers. 127: 54-63.
 7. Kumar, A., **Sharma K. K.**, Kumar P. and Ramchiary N (2015) Laccase isozymes from *Ganoderma lucidum* MDU-7: isolation, characterization, catalytic properties and differential role during oxidative stress. Journal of Molecular Catalysis B: Enzymatic. 113: 68-75.
 8. Singh, D., **Sharma, K. K.**, Jacob, S and Gakhar, S. K (2014) Molecular docking of laccase protein from *Bacillus safensis* DSKK5 isolated from earthworm gut: A novel method to study dye decolorization potential. Water, Air, and Soil Pollution. 225: 2175.
 9. Singh, D., **Sharma, K. K.**, Dhar, M. S. and Viridi, J. S. (2014) Molecular modeling and docking of novel laccase from multiple serotype of *Yersinia*

- enterocolitica* suggests differential and multiple substrate binding. Biochemical and Biophysical Research Communications. 449(1): 157-162.
10. Sharma, S., **Sharma, K.K.** and Kuhad, R.C (2014) An efficient and economical method for extraction of DNA amenable to biotechnological manipulations, from diverse soils and sediments. Journal of Applied Microbiology. 116(4):923-933.
 11. **Sharma, K.K.**, Shrivastava, B., Sastry, V.R.B., Sehgal, N. and Kuhad, R.C. (2013) Middle-redox potential laccase from *Ganoderma* sp.: its application in improvement of feed for monogastric animals. Scientific Reports. 3: 1299.
 12. **Sharma, K. K.**, Sharma, S., Karp, M and Kuhad, R. C (2012) Lignolytic enzymes improve soil DNA purity: Solution to methodological challenges of soil metagenomics. Journal of Molecular Catalysis B: Enzymatic. 83: 73-79.
 13. Diwaniyan, S., **Sharma, K. K** and Kuhad, R. C (2012) Laccase from an alkalitolerant basidiomycetes *Crinipellis* sp. RCK-1: Production optimization by response surface methodology. Journal of Basic Microbiology. 52: 397- 407.
 14. **Sharma, K. K.**, Shrivastava, B., Nandal, P., Sehgal, N., Sastry, V. B. R. Kalra and Kuhad, R. C (2012) Nutritional and Toxicological Assessment of White-Rot Fermented Animal Feed. Indian J of Microbiology. 52(2): 185-190.
 15. **Sharma, K.K.** and Kuhad, R. C. (2010) Genetic transformation of lignin degrading fungi facilitated by *Agrobacterium tumefaciens*. BMC Biotechnology. 10: 67
 16. Kuhad, R.C., Mehta, G., Gupta, R and **Sharma, K. K.** (2010) Fed batch enzymatic saccharification of newspaper cellulose improves the sugar content in the hydrolysates and eventually the ethanol fermentation by *Saccharomyces cerevisiae*. Biomass and Bioenergy. 34: 1189-1194.
 17. **Sharma, K. K.** and Kuhad, R. C. (2009) An Evidence of Laccase in Archaea. Indian J of Microbiology. 49:142-150.
 18. **Sharma, K. K.** and R. C. Kuhad (2008) Laccase: Enzyme revisited function redefined. Indian Journal of Microbiology. 48: 309-316.
 19. Gupta, R., **Sharma, K. K.** and Kuhad, R. C. (2008) Separate hydrolysis and fermentation (SHF) of *Prosopis juliflora*, a woody substrate, for the production of

- cellulosic ethanol by *Saccharomyces cerevisiae* and *Pichia stipitis*-NCIM 3498 Bioresource Technology. 100: 1214-1220.
20. Gupta, S., Kapoor, M., **Sharma, K. K** and Kuhad, R. C. (2008) Production and recovery of an alkaline exo-polygalacturonase from *Bacillus subtilis* RCK under solid-state fermentation using statistical approach. Bioresource Technology 99: 937-945.
 21. **Sharma, K. K.**, Gupta, S and Kuhad, R.C. (2006). *Agrobacterium*-mediated delivery of marker genes to *Phanerochaete chrysosporium* mycelial pellets, A model transformation system for white-rot fungi. Biotechnology and Applied Biochemistry. 43, 181-186.
 22. **Sharma, K. K.**, Kapoor, M., and Kuhad, R. C. (2005). *In vivo* enzymatic digestion, *in vitro* xylanase digestion, metabolic analogues, surfactants and polyethylene glycol ameliorate laccase production from *Ganoderma* sp. kk-02. Letters in Applied Microbiology. 41, 24-31.

Book Chapters:

- 1) Kapoor, R. K., **Sharma, K. K.**, Kuhar, S., and Kuhad, R. C. (2005). Diversity of lignin degrading microorganisms, ligninolytic enzymes and their biotechnological applications. In T. Satyanarayana and B. N. Johri (ed). I. K. International Pvt. Ltd., New Delhi. 815-846.
- 2) **Sharma, K. K.**, Kuhar, S., Kuhad, R. C. and Bhat, P. N. (2007) Combinatorial approaches to improve plant cell wall digestion: possible solution for cattle feed problem. . In R. C. Kuhad and A. Singh (ed). I. K. International Pvt. Ltd. New Delhi.
- 3) Gupta, S., Deepti., Kuhar, S., **Sharma, K. K.**, Singh, A., and Kuhad, R. C. (2007) Microbial Management of Pollutant from Textile Industry, In A. Verma (ed). I. K. International Pvt. Ltd. New Delhi. 209-240.
- 4) Kuhad, R. C., Kuhar, S., Kapoor, M., **Sharma, K. K.**, and Singh, A. (2007) Lignocellulolytic Microorganisms, and their Enzymes. In R. C. Kuhad and A. Singh (ed). I. K. International Pvt. Ltd. New Delhi.

- 5) Kuhar, S., Kapoor, M., Kapoor, R., **Sharma, K. K.**, Singh, A and Kuhar, R. C. (2007) Biodiversity of Ligninolytic Fungi. In R. C. Kuhad and A. Singh (ed). I. K. International Pvt. Ltd. New Delhi.
- 6) **Sharma, K. K** (2012) Sustainable Biofuels from Lignocellulosic Biomass in Genomic era. In S. K. Tiwari and B. Singh (ed). Lambert Academic Publication, Germany. ISBN: 978-3-659-15773-8
- 7) Ramesh Chander Kuhad, Sarika Kuhar, **Krishna Kant Sharma**, and Bhuvnesh Shrivastava (2013) Microorganisms and Enzymes Involved in Lignin Degradation Vis-à-vis Production of Nutritionally Rich Animal Feed: An Overview 3-44, ch1, Biotechnology for Environmental Management and Resource Recovery Ed. R. C. Kuhad and Ajay Singh, Springer. ISBN 978-81-322-0875-4
- 8) **K. K. Sharma** , Deepti Singh , Sapna, Bijender Singh, and Ramesh Chander Kuhad (2013) Ligninolytic Enzymes in Environmental Management 219-238 ch 12, Biotechnology for Environmental Management and Resource Recovery Ed. R. C. Kuhad and Ajay Singh, Springer. ISBN 978-81-322-0875-4
- 9) Sapna, Bijender Singh , Deepti Singh, and **K. K. Sharma** (2013) Microbial Phytases in Skirmishing and Management of Environmental Phosphorus Pollution 239-260 ch 13, Biotechnology for Environmental Management and Resource Recovery Ed. R. C. Kuhad and Ajay Singh, Springer. ISBN 978-81-322-0875-4
- 10) Bijender Singh, Anil Kumar, Vinay Malik and **Krishna Kant Sharma**. (2013) Phytase: An Enzyme for the Degradation of Anti-Nutritional Factor, Promising Trends in Science Galaxy,(PTSG-2013), 25-32. ISBN: 978-81-920945-3-3
- 11) Deepti Singh, Ekta Narang, Preeti Chutani, Amit Kumar, **K. K. Sharma**, Mahesh Dhar, Jugsaran S Virdi (2014) Isolation, Characterization and Production of Bacterial Laccase from *Bacillus* sp. Ch. 39. R. N. Kharwar et al. (eds.), Microbial Diversity and Biotechnology in Food Security, Springer.
- 12) Akula Ramakrishna, Sarvajeet S. Gill, **Krishna K. Sharma**, Narendra Tuteja, and Gokare A. Ravishankar (2016) Indoleamines (Serotonin and Melatonin) and Calcium-Mediated Signaling in Plants. Ch. 7, pp. 85-95. Gokare A. Ravishankar Akula Ramakrishna (eds.), Serotonin and Melatonin: Their Functional Role in

- Plants, Food, Phytomedicine, and Human Health, Taylor and Francis. ISBN: 978-1-4987-3905-4.
- 13) Krishna K. Sharma**, Deepti Singh and Amit Kumar (2016) Biochemical and structural studies of laccase isozymes from *Ganoderma lucidum* MDU-7 pp. 390-396. A. Méndez-Vilas (eds.), Microbes in the spotlight: recent progress in the understanding of beneficial and harmful microorganisms, Brown Walker Press. ISBN-13: 9781627346122
- 14).** Amit Kumar, Deepti Singh, Anuj K. Chandel and **Krishna K. Sharma** (2017) Technological Advancement in Sustainable Production of Second Generation Ethanol Development: An Appraisal and Future Development pp. 299-336. A. K. Chandel and R. K. Sukumaran (eds.), Sustainable Biofuel Development in India, Springer International Publishing. DOI 10.1007/978-3-319-50219-9_14

Paper Published in Conferences:

- 1).** Singh D, **Sharma KK**, Kumar A, Singh R and Jacob SR (2014) Isolation, screening and Identification of laccases from gut bacteria. Proceedings in “Next Generation Sciences: Vision 2020 and Beyond” pp-55-61. ISBN: 987-81-920945-4-0.
- 2).** Chutani P, **Sharma KK**, Dhaka A, Anu, Deepa and Malik V (2014) Screening and production of xylanase from various ascomycetes fungi. Proceedings in “Next Generation Sciences: Vision 2020 and Beyond” pp-301-306. ISBN: 987-81-920945-4-0.
- 3).** Sapna., Jain, J., Kumar, A., **Sharma, K.K** and Singh, B (2012) Phytic acid: An anti-nutritional factor combating diseases. Proceedings in “National Conference on Challenges in combating diseases: Cause to cure” pp-303-310. ISBN: 978-81-920945-2-6.
- 4).** **Sharma, K. K** and Singh, B (2011) Archaea: Housekeeping Genes and Evolutionary Perspective. Proceedings in “National Conference on Environmental and Health Issues: In a changing climatic scenario” pp-29-42.

Poster presented in Conference/Symposia

- R. C. Kuhad, J. Gomes, K. K. Sharma, Sanjay Kumar, B Shrivastava, P.N. Malik, K K Jain, S Kharab, H. M. Saini, N Sehgal, V.R.B. Sastri. Bioconversion of wheat straw in to value added cattle feed by RCK –1 fungal isolate. III International conference on Environmental, Industrial and Applied Microbiology (BioMicroWorld 2009), Lisbon, Portugal, 2-4 Dec 2009. (Poster)
- Bhuvnesh Shrivastava, Preeti N Malik, K K Sharma, Jain K K, Kalyani Padhee and Ramesh Chander Kuhad “Solid –State fermentation for bioconversion of wheat straw into upgraded animal feed”. 50th Annual conference of Association of Microbiologist of India, National Chemical Laboratory, Pune, India, Dec 15-18 (2009)
- R.C. Kuhad, J. Gomes, K.K. Sharma, Sanjay Kumar, P.N. Malik, B. Shrivastava., and Jain K K. “Solid State Fermentation of wheat straw by White-rot fungus for production of Animal Feed”. 50th Annual conference of Association of Microbiologist of India, National Chemical Laboratory, Pune, India, Dec 15-18 (2009)

Nucleotide sequences submitted to GenBank : 80

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