

August 2015

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Education

Ph. D.

Bihar University, India, 1992

Master of Science (Botany)

Patna University, India

Bachelor of Science (Honors)

Patna University, India

Academic assignments

April 2006- Present	Instructor , Department of Biology, Western Kentucky University, Bowling Green, KY 42101
2001 May- 2006 March	Research scientist , Department of Biology, Western Kentucky University, Bowling Green, KY
1998-2001	Senior Lecturer , Department of Microbiology and Biotechnology, S.B.S. Institute of Biomedical Sciences and Research, Meerut University, Meerut, India
1992-1994	Research Associate , School of Biotechnology, Banaras H. University, Varanasi, India
1987-1992	Junior, Senior Research Fellow , Bihar University, India
1983-1985	Junior Research Fellow , Delhi University, Delhi

Class Teaching

Undergraduate courses:

General Biol (Biol-113)

General Microbiology (Biol-207)

Microbiology Lab (Biol-208)

Upper-level undergraduate courses:

Plant Therapeutics (Biol-490)

Honors Colloquium: Nanotechnology–Applications (HON 300)

Graduate-level courses:

Plant Therapeutics (Biol-490G)

Investigations in Biology (Biol-516)

Thesis Research (Biol-599)

Completed Research Support

2005-07 - NSF-EPSCoR grant (\$22000): Principal Investigator - “Genetic transformation of *Sesbania drummondii* with citrate synthase gene for enhanced accumulation of heavy metals”

July 2009 - April, 2010 - NIH-KBRIN Grant (\$9,899.00): Principal Investigator -
"The effect of plumbagin on the pathogenesis of ulcerative colitis"

May 2010-11 – WKU- Office of Sponsored Program Incentive Grant (\$5,877): Principal Investigator - "Anti-inflammatory effects of plumbagin in ulcerative colitis"

March 2011 – 2012 Kentucky Academy of Sciences Award for Summer Student's Research (\$3000): Principal Investigator - "Studying Effects of Plumbagin on Experimental Ulcerative Colitis"

October 2011 - Dec. 2012 – RCAPE Grant (\$10,000): Principal Investigator - "The effect of coconut oil on ulcerative colitis in a mouse model"

May 1, 2012 – Dec 2013 – FUSE Grant (\$5000): Principal investigator – "Studying the effect of Ga nanoparticles on inflammatory responses in mice"

Current Research Grant – Internal

Jan 2013 – Dec 2014 –RCAPE Grant (\$3,500): Principal Investigator – "Inflammatory response in Mice Exposed to TiO₂ Nanoparticles"

Jan 2014 – Dec 2015–RCAPE Grant (\$14,748): Toxicological Evaluation of Plant-synthesized Gold Nanoparticles

Research supervision

Undergraduate student research

Cyrus Sadrinia – BS Honors College – 2014- continuing

Brandon Ray – BS Biology – 2013

Scott Strecker – BS Biology – 2012–2013.

Justin Pile – BS Honors Thesis- 2010-1012; Research awarded at Kentucky Academy of Sciences (KAS) annual meeting - 2011; 2012

Sujung Kim – BS (Chem)- 2009-2011 (Completed)

Annesia Lamb- Completed BS (Biol)- 2006-07 – research awarded at KAS annual meeting -2007

Reyes Quintero - Completed BS (Biol)- 2005-06 – research awarded at Sigma Xi meeting-2006

Christa Gaskill - Completed BS- 2006; Jennifer Morris- BS (Biol)-2006; Morgan Mc Gray- BS (Biol)

Graduate Student Research

Pranav Chandra: Biology - MS Thesis (August 2010-May 2013), "Effect of coconut oil on ulcerative colitis in a mouse model" - Research awarded at KAS Annual Meeting – 2011 & 2012; at Student Research Conference, 2012 – Completed

Shaughnessy-Begay, A: Research Internship (August 2008 - May 2009), "Use of Burdock and Plantain Leaves in the Healing of Burn Wound Injury by Amish and Mennonite Populations: An Evaluation for the Antimicrobial Efficacy" – Completed

Graduate Student Advisor

Mary Beth Ping – 2013-14; Charity Jackson – 2013-14

Ashley Cox – 2013-14; Justin Pile – 2012-13

Publications with students at WKU

1. **Alok, P.C.:** Sharma, N. Doerner, K.C., Alok, P.C. and Choudhary, M. 2015. Skatole remediation potential of *Rhodopseudomonas palustris* WKU-KDNS3 isolated from an animal waste lagoon. Letters in Applied Microbiology 60 (3) 298–306
2. **Esterle, A.:** Krishnamurthy, S., Esterle, A. Sharma, N.C. and Sahi, S.V. 2014. Yucca-derived synthesis of gold nanomaterial and their catalytic potential. Nanoscale Research Letters, 9:627
3. **Pile, Justin:** Justin, P., Navalta, J., Davis, C., Sharma N.C. 2013. Interventional effect of plumbagin in experimental ulcerative colitis in mice. *Journal of Natural Products* 76, 1001-1006.

4. **Starnes, D.:** Sharma, N.C., Starnes, D. L., Sahi, S.V. 2007. Phytoextraction of excess soil phosphorus. *Environmental pollution* 146, 120-127.
5. **Ruley, T.:** Ruley, A.T., Sharma, N. C., Sahi, S. V. and Singh, S. R. 2006. Effects of lead and chelators on growth, photosynthetic activity and Pb uptake in *Sesbania drummondii* grown in soil. *Environmental pollution* 144 (1), 11-18.
6. **Ruley, T.:** Ruley A.T., Sharma N.C., Sahi, S.V. 2004. Antioxidant defense in a lead accumulating plant, *Sesbania drummondii*. *Plant Physiology and Biochemistry*, 42 (11), 899-906.
7. **Cheepala, S.:** Cheepala, S.B., Sharma, N.C. Sahi, S.V. 2004. Rapid in vitro regeneration of *Sesbania drummondii*: a leguminous shrub of medicinal importance. *Biologia Plantarum*, 48 (1), 13-18.

Professional Memberships

American Association of Immunologists
 American Society of Plant Biologists, ASPB
 Kentucky Academy of Sciences, KAS

Service

Kentucky Academy of Sciences: Served as
 Secretary (2009-10) and President (2010-11) of Botany Section
 Biology Department Graduate Students Research Committee
 Biology Department Promotion & Tenure Subcommittee
 University Pre-Dental Society (Faculty advisor)
 Graduate Students' Academic Advising Committee
 Biology Department Biology (113) & Biology (207) Courses – Digital Media Adoption Committee

Reviewer of peer-reviewed research journal/grant proposal

Grant proposal of The U.S. Civilian Research & Development Foundation
 Grant proposal (0.6 Million pounds) of BBSRC, UK
 Reviewer of Industrial Crops and Products
 Reviewer of Journal of Plant nutrition and Soil Science
 Reviewer of Journal of Agronomy
 Reviewer of Journal of Plant Physiology & Pathology
 BMC Complementary and Alternative Medicine
 Reviewer of Journal of Natural Products
 Panel Reviewer of EPA Science to Achieve Results (STAR) Graduate Fellowship Program

Certifications

Certificate of Completion of Quality Matters Peer Reviewer Course (PRC) – Jan 2013
 Certificate of Completion for Applying the QM Rubric (APPQMR) 2008-12 (514) F2F dedicated
 [QM Program is an inter-institutional quality assurance in Online learning/courses. It involve
 a collegial review process where reviewers provide feedback on the course design]
 Completion of Seminars on Critical Thinking Foundations & Assessing Critical Thinking (2008-10)
 Successful Completion of Training Modules, CITI Collaborative Institutional Training Initiative:
 CITI training is a federal-requirement in proper handling of research animals

Peer-Reviewed Publications

Sharma, N. Doerner, K.C., Alok, P.C. and Choudhary, M. 2015. Skatole remediation potential of *Rhodopseudomonas palustris* WKU-KDNS3 isolated from an animal waste lagoon. *Letters in Applied Microbiology* 60 (3) 298–306
 Krishnamurthy, S., Esterle, A. **Sharma, N.C.** and Sahi, S.V. 2014. Yucca-derived synthesis of gold nanomaterial and their catalytic potential. *Nanoscale Research Letters*, 9:627
 Justin, P., Navalta, J., Davis, C., **Sharma N.C.** 2013. Interventional effect of plumbagin in experimental ulcerative colitis in mice. *Journal of Natural Products* 76, 1001-1006.

- Sharma, N.C.** and Sahi S. 2012. AuNPs Synthesis by Plants – Controlling Nanomaterial Shapes and Sizes. In: Advances in Nanotechnology & Applications, Eds. H. Tran and G. Pillai, Center for Nanotechnology Education Research and Applications, Sullivan University College of Pharmacy, Louisville, USA. Pp. 94-104
- Sharma, N.C.** and Sahi S. 2012. Increased organic phosphorus use promoting biomass and tissue P hyperaccumulations in *Lolium multiflorum* grown in sterile media. *Environmental Science & Technology* 45, 10531–10537
- Sharma, N.C.** and Sahi S. 2011. Excess soil phosphorus – accelerated P transfer, water quality deterioration and sustainable remediation strategies. In: Improving Crop Resistance to Abiotic Stress, Eds. N. Tuteja, A. Tiburcio, S. Gill, and R. Tuteja, Wiley-VCH Verlag GmbH & Co. KGaA. Pp.165-191
- Sharma, N.C.**, Sahi, S.V., Nath, S., Parsons J.G., Gardea- Torresdey, J.L. and Pal, T. 2007. Synthesis of plant-mediated gold nanoparticles and catalytic role of biomatrix-embedded nanomaterials. *Environmental Science & Technology* 41 (14), 5137–5142
- Sharma, N.C.**, Starnes, D. L., Sahi, S.V. 2007. Phytoextraction of excess soil phosphorus. *Environmental pollution* 146, 120-127.
- Ruley, A.T., **Sharma, N. C.**, Sahi, S. V. and Singh, S. R. 2006. Effects of lead and chelators on growth, photosynthetic activity and Pb uptake in *Sesbania drummondii* grown in soil. *Environmental pollution* 144 (1), 11-18
- Sharma, N.C.**, Sahi, S.V. 2005. Characterization of phosphate accumulation in *Lolium multiflorum* for remediation of phosphorus-enriched soils. *Environmental Science & Technology* 39 (14), 5475-80
- Sharma, N.C.**, Sahi, S.V., Jain, J.C. 2005. *Sesbania drummondii* cell cultures: ICP-MS determination of the accumulation of Pb and Cu and assay of antioxidative enzyme activities. *Microchemical J.*, 81, 163-169
- Sharma, N.C.**, Sahi, S.V. 2005. Physiology of lead accumulation and tolerance in a lead accumulating plant (*Sesbania drummondii*). In *Trace Elements in the Environment: Biogeochemistry, Biotechnology and Bioremediation*. Eds. Prasad, M.N.V., Naidu, R., Sajwan, K. CRC Press, Boca Raton, FL. pp. 425-438
- Sharma, N.C.**, Sahi, S.V., Jain, J.C., Raghothama, K.G. 2004. Enhanced accumulation of phosphate by *Lolium multiflorum* cultivars grown in phosphate-enriched medium. *Environmental Science & Technology*, 38, 2443-2448.
- Sharma, N.C.**, Gardea-Torresdey, J.L., Parsons, J., Sahi, S.V. 2004. Chemical speciation and cellular deposition of lead in *Sesbania drummondii*. *Environmental Toxicology & Chemistry*, 23 (9), 2068-2073
- Ruley A.T., **Sharma N.C.**, Sahi, S.V. 2004. Antioxidant defense in a lead accumulating plant, *Sesbania drummondii*. *Plant Physiology and Biochemistry*, 42 (11), 899-906
- Sahi, S.V., **Sharma, N.C.** 2004. Phytoremediation of Lead. In *Trace and Ultratrace Elements in Plants and Soil*. Ed. Shtangeeva, I. WIT Press, Boston/ Southampton, UK. pp. 209-217
- Cheepala, S.B., **Sharma, N.C.** Sahi, S.V. 2004. Rapid in vitro regeneration of *Sesbania drummondii*: a leguminous shrub of medicinal importance. *Biologia Plantarum*, 48 (1), 13-18.
- Sharma, N.C.**, Jain, J., Sahi, S.V. 2003. Evaluation of phosphate phytoremediation potential of ryegrass. *Proceedings of 2nd International Agronomy Congress: Balancing food and environment security*, New Delhi, India, November, 2002, pp. 1009-1010.
- Ruley, T., **Sharma, N.C.**, Sahi, S.V. 2003. Transport and Sequestration of Lead in *Sesbania drummondii*. *Proceedings of 7th International Conference on the Biogeochem. of trace elements*, Uppsala, Sweden, June 2003, pp. 194-195.
- Sahi, S.V., **Sharma, N.C.**, Bryant, N.L., Singh, S.R. 2002. Characterization of a lead hyperaccumulator shrub, *Sesbania drummondii*. *Environmental Science & Technology*, 36, 4676-4680.
- Deepti, M., **Sharma, N.C.**, Cristae, P., Sahi, S.V. 2002. Transformation of maize by 2,4, dihydroxy–7-methoxy-2H-1,4-benzoxazin-3(4H)-one resistant *Agrobacterium* strains. *Biotechnology Letters*, 24, 197-203.
- Boswell, C., **Sharma, N.C.** and Sahi, S.V. 2002. Copper–tolerance and - accumulation potential of *Chlamydomonas reinhardtii*. *Bulletin of Environmental Contamination and Toxicology*, 69, 546-553.
- Raikhy, G., **Sharma, N.C.** and Gupta, S. 2001. Dairy waste water: a resource for single cell protein production by yeast. *Pollution Research*, 18 (2), 112-117.
- Tiwari, K.N., **Sharma, N.C.**, Tiwari, V., Singh, B.D. 2000. Micropropagation of *Centella asiatica* (L.), a valuable medicinal herb. *Plant Cell Tissue & Organ Culture*, 63 (3), 179-185.
- Koijam, B., **Sharma, N.C.** and Gupta, S. 2000. Production and characterization of fungal cellulases from lignocellulosic wastes. *Asian J. Micro. Biotechnol. Env. Sci.* 4 (3-4), 113-120.

Presentations in National/International/ Regional meetings

Strecker, R., Ray, B., **Sharma, N.C.** 2013. Inflammatory responses in mice exposed to multiple doses of TiO₂ nanoparticles. Annual Meeting of the American Association of Immunologists, May 3-7, 2013, Honolulu, Hawaii

Chandra P and **Sharma N.C.** 2012. Bioaccumulation and effects of gold nanoparticles after their prolonged administration in mice. 5th. Annual Nanotechnology Symposium, Sullivan University College of Pharmacy, Sept. 20-21, 2012. Louisville

Chandra, P., **Sharma, N.C.** 2012. Effect of coconut oil in the chronic model of ulcerative colitis. 98th. Annual Meeting of Kentucky Academy of Sciences, Oct. 19-20, 2012. Richmond (KY)

Pile, J., **Sharma, N. C.** 2011. Studying the effect of plumbagin in ulcerative colitis in mice. 97th. Annual Meeting of Kentucky Academy of Sciences, Nov 4-5, 2011. Murray (KY)

Chandra, P., **Sharma, N.C.** 2011. Effect of coconut oil in the experimental model of ulcerative colitis. 97th. Annual Meeting of Kentucky Academy of Sciences, Nov 4-5, 2011. Murray (KY)

Pile, J., Kim, S., **Sharma, N. C.** 2010. Studying effects of plumbagin in ulcerative colitis pathogenesis in mice. 96th. Annual Meeting of Kentucky Academy of Sciences, Nov 12-13, 2010. Bowling Green (KY)

Lamb Annesia, **Sharma, N.C.** 2007. Cell and tissue culture of a lead accumulating shrub, *S. drummondii*. 2007 PMBB research symposium, The Ohio State University, March 30-31, 2007. Columbus (OH)

Sharma, N.C., Paul, P., Sahi, S.V. 2006. Phosphatase activities and assimilation of organic phosphorus in *Lolium multiflorum* grown *in vitro*. *International annual meeting, American Society of Plant Biologists*, Aug.5-9, 2006. Boston, MS, USA

Sharma, N.C., Sahi, S.V. 2005. Evaluation of organic phosphorus assimilation in *Lolium multiflorum*. *International annual meeting, American society of Agronomy, Crop science society of America & Soil science society of America*, Nov. 6-10, 2005. Salt Lake City, UT, USA

Sharma, N.C., Sahi, S.V. 2004. Could phytoremediation be used to remove excess phosphorus from soil? *International annual meeting, American society of Agronomy*, Oct 31-Nov 4, 2004. Seattle, Washington

Sharma, N.C., Sahi, S.V. 2004. Strategy for phosphate phytoremediation. 4th *International Phosphorus Workshop*, August 16-19, 2004. Wageningen, The Netherlands.

Ruley, T., **Sharma, N.C.**, Sahi, S.V. 2003. Transport and sequestration of lead in *Sesbania drummondii*. 7th *International Conference on the Biogeochem. of trace elements*, June 2003, Uppsala, Sweden.

Sharma, N.C., Sahi, S.V. 2003. Evaluation of crops for phosphate accumulation potential (poster). *International annual meeting, American society of Agronomy*, Nov 2-6, 2003. Denver, Colorado, USA

Ruley, T., **Sharma, N.C.**, Sahi, S.V. 2003. Lead Tolerance in *Sesbania drummondii*. *International annual meeting, American society of Agronomy*, Nov 2-6, 2003. Denver, Colorado, USA