

## ***DR. SANTOSH KUMAR TIWARI***

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**Date of Birth:** 7<sup>th</sup> July, 1975



### **Education**

- **Indo-US Research Fellow** (December, 2010 to June, 2011) Design of Antimicrobial Peptides for Therapeutic Application: Structure-Function Analysis. Mentor: Dr. M. L. Chikindas, Department of Food Science, Rutgers, The State University of New Jersey, USA. Supported by Indo-US Science and Technology Forum, New Delhi.
- **Ph.D.** (Genetics) 2008. Production, Purification and Characterization of plantaricin LR14: A Novel Two-Peptide Bacteriocin from *Lactobacillus plantarum* LR/14. Supervisor: Prof. Sheela Srivastava, Department of Genetics, University of Delhi South Campus, New Delhi, India.
- **M.Sc.** (Botany) 1997. Specialization in Environmental Biology. First division with 67.4% marks, Udai Pratap College (Varanasi), Purvanchal University, U.P., India.

### **Awards, Membership and Fellowships**

- Regular Member of US HUPO (Human Proteome Organization) 2011
- Innovative Young Academician/Researcher Award 2010
- Indo-US Research Fellowship Award 2010
- DST Young Scientist (FAST TRACK Scheme) 2009
- ICMR Research Associate Fellowship- February 2008 to July 2008
- ICMR Senior Research Fellowship (SRF)-February 2006 to February 2008.
- Life member of Biotech Research Society of India (BRSI)
- Life member of Association of Microbiologists of India (AMI)
- Founder member of Swedish South Asian Network on Fermented Foods (SASNET-Fermented Foods)
- CSIR/UGC National Eligibility Test (NET) for Lecturership. December, 2001

### **Research Guidance:**

#### **MSc Students**

2013: Gitika, Parul, Geeta and Annu.

2014: Karishma and Nidhi

2015: Monica, Nandita, Jyoti

#### **PhD Students**

Naveen Kaushik (Completed, 2014)

Aabha Gupta (Thesis submitted, 2015)

Ramanjeet Kaur (Registered, 2012)

Vijay Kumar (Registered, 2013)

### **Areas of Interest**

Microbial Technology, Protein Purification and Characterization, Molecular Biology and Microbial Genetics.

### National Seminar Organized

1. National Seminar on "Microbes and Resource Management" as organizing secretary. Organized by AMI Rohtak Unit on October 22, 2011.
2. National Seminar on "Recent Advances in Application of Genetics" as organizing secretary. Organized by Department of Genetics, MDU, Rohtak on March 20, 2012.
3. 2<sup>nd</sup> National Seminar on "Microbes in Human Welfares" as organizing secretaries. Organized by Department of Microbiology and AMI Rohtak Unit on March 24, 2012.
4. National Seminar on Novel Antimicrobials: An Alternative to Clinical Antibiotics. Organizing Secretary. Organized by Department of Genetics, MDU, Rohtak on September 14, 2013.
5. One day Conference on Molecular Pathology of Human Genetic Diseases. Joint Secretary. Organized by Department of Genetics, MDU, Rohtak on August 23, 2014.
6. National Conference on Therapeutic Potential of Natural Products: Current Innovations & Future Trends. Joint Secretary. Organized by Department of Genetics, MDU, Rohtak on March 19, 2015.

### Research Projects undertaken

S. No.	Funding Agencies	Title of the projects	Duration	Amount (lacs)	Status
1.	ICMR (2014)	Characterization of plantaricin LD1 from <i>Lactobacillus plantarum</i> LD1 to establish mechanism of action against target microorganisms	3 Years	17.45	Ongoing
2.	DBT (2014)	Purification and molecular characterization of halocin produced by <i>Haloferax larsenii</i> strains HA/3	3 Years	42.51	Ongoing
3.	DBT (2013)	Development and Validation of High Throughput Methods for Screening of Antimicrobial Peptides from Lactic Acid Bacteria	3 Years	44.60	Ongoing
4.	DST (2010)	Bacteriocin Production by Lactic Acid Bacteria - Purification and Characterization	3 Years	17.00	Completed
5.	CSIR (2010)	Characterization of halocins produced by haloarchaea isolated from Pachpadra Salt Lake in Rajasthan	3 Years	19.75	Completed
6.	UGC (2009)	Characterization of bacteriocins of lactic acid bacteria isolated from fermented foods-Search for an effective food biopreservative	3 Years	10.32	Completed

7.	IUSSTF, New Delhi (2010)	Design of Antimicrobial Peptides for Therapeutic Application: Structure-Function Analysis	6 months	10.00	Completed
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#### Research Publications:

1. Kumar V., Saxena J., **Tiwari S.K.** (2015) Description of a new halocin-producing *Haloferax larsenii* HA/1 and antimicrobial activity present in culture supernatant. Extremophiles (Communicated).
2. **Tiwari S. K.**, Srivastava S. (2015) Broad-antimicrobial-spectrum of plantaricin LR14 against Gram-positive and Gram-negative bacteria. Austin Journal of Analytical and Pharmaceutical Chemistry (Accepted).
3. Gupta A., **Tiwari S.K.** (2015) Probiotic potential of bacteriocin-producing *Enterococcus hirae* strain LD3 isolated from batter of Dosa. Annals of Microbiology (DOI: 10.1007/s13213-015-1075-4 in press). Impact factor 1.039.
4. Singh, N., Kaushik N.K., Mohankrishnan D., **Tiwari S.K.**, Sahal D. (2015) Antiplasmodial Activity of Medicinal Plants from Chhotanagpur Plateau, Jharkhand, India. Journal of Ethnopharmacology 165: 152-162. (doi:10.1016/j.jep.2015.02.038). Impact factor 2.939.
5. Kaushik N.K., Bagavan A., Abdul R.A., Zahir A.A., Kamaraj C., Elango G., Jayaseelan C., Kirthi A.V., Kumar T.S., Marimuthu S., Rajakumar G., **Tiwari S.K.**, Sahal D. (2015) Evaluation of antiplasmodial activity of medicinal plants from North Indian Buchpora and South Indian Eastern Ghats. Malaria Journal 14:65 (DOI 10.1186/s12936-015-0564-z). Impact factor 3.49.
6. **Tiwari S.K.**, Noll K.S., Cavera V.L., Chikindas M.L. (2015) Improved antimicrobial activity of synthetic-hybrid bacteriocins designed from enterocin E50-52 and pediocin PA-1. Applied and Environmental Microbiology 81: 1661-1667. Impact Factor 3.952.
7. Gupta A and **Tiwari S.K.** (2014a) Probiotic potential of *Lactobacillus plantarum* LD1 isolated from batter of Dosa, a South Indian fermented food. Probiotics and Antimicrobial Proteins 6:73-81.
8. Gupta A. and **Tiwari S.K.** (2014b) Plantaricin LD1: A bacteriocin produced by food isolate of *Lactobacillus plantarum* LD1. Applied Biochemistry and Biotechnology 172: 3354-3362. Impact Factor 1.687.
9. Gitika and **Tiwari S.K.** (2013) Probiotic potential of lactic acid bacteria strain LD/4. International journal of Pharmacy and Life Sciences 49: 3000-3006.
10. Kumar M., **Tiwari SK** and Srivastava S. (2010) Purification and characterization of enterocin LR/6, a new bacteriocin from *Enterococcus faecium* LR/6. Applied Biochemistry and Biotechnology 160: 40-49. Impact Factor 1.687.
11. Ghosh N., Kumar M., **Tiwari S.K.** and Srivastava S. (2008) Probiotic potential of two Environmental isolates of Lactic acid bacteria, *Lactobacillus plantarum* LR/14 and *Enterococcus faecium* LR/6. International Journal of Probiotics and Prebiotics 3: 199-206.
12. **Tiwari S.K.** and Srivastava S. (2008a) Purification and Characterization of a novel bacteriocin from natural isolate of *Lactobacillus plantarum* LR/14. Applied Microbiology and Biotechnology 79: 759-767. Impact Factor 3.811.
13. **Tiwari S.K.** and Srivastava S. (2008b) Characterization of a bacteriocin from *Lactobacillus plantarum* strain LR/14. Food Biotechnology 22: 241-267. Impact Factor 0.636.
14. **Tiwari S.K.** and Srivastava S. (2008c) Statistical optimization of culture components for enhanced bacteriocin production by *Lactobacillus plantarum* LR/14. Food Biotechnology 22: 64 -77. Impact Factor 0.636.

**Book edited:**

1. Current Trends in Biotechnology (eds S. K. Tiwari and Bijender Singh) ISBN: 978-3-659-15773-8, LAMBERT Academic Publishing GmbH & Co., Saarbrücken, Germany.

**Chapters in books:**

1. Kumar, V. and **Tiwari, S.K.** (2014). Peptide Antibiotics of haloarchaea: An Alternative to clinical antibiotics. In Biotechnology Vol. 3: Microbial Biotechnology (ed. J.N. Govil), Studium Press LCC, USA. pp 203-223.
2. Gupta A. and **Tiwari S. K.** (2012) Applications of Lactic Acid Bacteria and their Bacteriocins. In Current Trends in Biotechnology (eds S.K. Tiwari and Bijender Singh) LAMBERT Academic Publishing GmbH & Co., Saarbrücken, Germany, pp 249-274.
3. **Tiwari S. K.** (2012) Recent advances in peptide antibiotics of lactic acid bacteria. In Current Trends in Biotechnology (eds S.K. Tiwari and Bijender Singh) LAMBERT Academic Publishing GmbH & Co., Saarbrücken, Germany, pp 74-99.
4. Singh B. and **Tiwari S. K.** (2012) Metagenomics: A gateway for novel bio-molecules of biotechnological potential. In Current Trends in Biotechnology (eds S.K. Tiwari and Bijender Singh) LAMBERT Academic Publishing GmbH & Co., Saarbrücken, Germany, 335-350.
5. Gupta A. and **Tiwari S.K.** (2008) Industrial Applications of Lactic Acid Bacteria. In Molecular Biology and Biotechnology: Selected Contributions of International Conference-2008 (eds V. Sharma and B.N. Tripathi) LAMBERT Academic Publishing GmbH & Co., Saarbrücken, Germany, 97-113.

**Gene Sequences submitted:**

1. **Tiwari S.K.** and Srivastava S. (2007) Partial nucleotide sequence of 16S ribosomal RNA gene from *Lactobacillus plantarum* strain LR/14. Gene Bank Accession Number EF166073.
2. Gupta A. and **Tiwari S. K.** (2013) Partial nucleotide sequence of 16S ribosomal RNA gene from *Lactobacillus plantarum* strain LD1. Gene Bank Accession Number KC590079.
3. Gupta A. and **Tiwari S. K.** (2013) Partial nucleotide sequence of 16S ribosomal RNA gene from *Enterococcus faecium* strain LD3. Gene Bank Accession Number KC710968.
4. Kaur R. and **Tiwari S.K.** (2013) Partial nucleotide sequence of 16S ribosomal RNA gene from *Pediococcus pentosaceus* strain LB44. Gene Bank Accession Number KC608754.
5. Kaur R. and **Tiwari S.K.** (2013) Partial nucleotide sequence of 16S ribosomal RNA gene from *Weissella confusa* strain LM85. Gene Bank Accession Number KC608755.
6. Kaur R. and **Tiwari S.K.** (2013) Partial nucleotide sequence of 16S ribosomal RNA gene from *Haloferax larsenii* strain HA4. Gene Bank Accession Number KC608756.
7. Kumar V. and **Tiwari S.K.** (2013) Partial nucleotide sequence of 16S ribosomal RNA gene from *Haloferax larsenii* strain HA3. Gene Bank Accession Number KC608757.
8. Kumar V. and **Tiwari S.K.** (2013) Partial nucleotide sequence of 16S ribosomal RNA gene from *Haloferax larsenii* strain HA1. Gene Bank Accession Number KC608758.

**Work presented in conferences:**

1. **Tiwari S.K.** (2015) Design of Antimicrobial Peptides for Therapeutic Applications: Structure-Function Analysis. National Conference on Therapeutic Potential of Natural Products: Current Innovations & Future Trends. Joint Secretary. Organized by Department of Genetics, MDU, Rohtak on March 19, 2015.

2. **Tiwari S.K.** (2015) Microbial Peptides: Discovering Novel Antibiotics. (invited talk) Department of Bioscience and Biotechnology, Banasthali University, Rajasthan. February 6, 2015.
3. **Tiwari S.K.** (2014) Bacteriocins and Halocins: Finding Alternative to Antibiotics. International Conference in Emerging Trends in biotechnology (Poster presentation). Organized by School of Life Science, JNU. November 6-9, 2014.
4. **Tiwari S.K.** (2014) Bacteriocins of Lactic Acid Bacteria: An alternative to Clinical Antibiotics (Oral Presentation). International Conference on Frontier Discoveries and Emerging Opportunities in Life Sciences. Organized by School of Biological Sciences, Dr. Hari Singh Gaur University, Sagar, M.P. February 13-15, 2014.
5. Kumar V. and **Tiwari S.K.** (2013) Identification of *Haloferax larsenii* HA1 and characterization of halocin HA/1 (Poster Presentation). International Conference in advances in Biotechnology and bioinformatics (ICABB 2013) & X Convention of the Biotech Research Society, India. Organized by Dr. D. Y. Patil Vidyapeeth, Pune and The Biotech Research Society, India. November 25-27, 2013.
6. Kumar V. and **Tiwari S.K.** (2013) Biochemical characterization of antimicrobial peptide from *Haloferax larsenii* HA/3 (Poster Presentation). 54<sup>th</sup> Annual Conference of Association of Microbiologists of India (AMI 2013). Platinum Jubilee Celebrations of Association of Microbiologists of India (Estd: 1938) & International Symposium on Frontier Discoveries and Innovations in Microbiology and its Interdisciplinary Relevance. Organized by Department of Microbiology, M. D. University, Rohtak. November, 17-20, 2013.
7. Kaur, R., Poonam and **Tiwari S.K.** (2013) Characterization of bacteriocins produced by lactic acid bacteria isolated from mulberry rhizosphere (Poster Presentation). 54<sup>th</sup> Annual Conference of Association of Microbiologists of India (AMI 2013). Platinum Jubilee Celebrations of Association of Microbiologists of India (Estd: 1938) & International Symposium on Frontier Discoveries and Innovations in Microbiology and its Interdisciplinary Relevance. Organized by Department of Microbiology, M. D. University, Rohtak. November, 17-20, 2013.
8. Gupta, A. and **Tiwari S.K.** (2013) Purification and Characterization of Plantaricin LD1 from *Lactobacillus plantarum* LD1 (Poster Presentation). 54<sup>th</sup> Annual Conference of Association of Microbiologists of India (AMI 2013). Platinum Jubilee Celebrations of Association of Microbiologists of India (Estd: 1938) & International Symposium on Frontier Discoveries and Innovations in Microbiology and its Interdisciplinary Relevance. Organized by Department of Microbiology, M. D. University, Rohtak. November, 17-20, 2013.
9. **Tiwari S.K.** (2013) Design of Antimicrobial Peptides for Therapeutic Application: Structure-Function Analysis. Indo-US Research Fellows Conclave Organized by Indo-US Science and Technology Forum (IUSSTF), New Delhi in partnership with Science and Engineering Research Board (SERB), Department of Science and Technology (DST), Government of India at Marriott Hotel, Pune. March 15-17, 2013.
10. **Tiwari S.K.** (2012) Characterization of peptide antibiotics of lactic acid bacteria and Haloarchaea (Poster Presentation). National Symposium on "Microbes in Health and Management". Organized by School of Life Sciences, Jawaharlal Nehru University, New Delhi. March 12-13, 2012.
11. **Tiwari S.K.** (2012) International Conference on "Towards Better Innovation Ecosystem" (attended), Organized by Indian National Academy of Engineering, New Delhi. September 20-21, 2012.
12. Gupta, A. and **Tiwari S.K.** (2012) Characterization of bacteriocins produced by *Lactobacillus hilgardii* LD/1 and *Enterococcus faecium* LD/3 (Poster Presentation). International Conference on Industrial Biotechnology; IX Convention of the Biotech Research Society, India; Indo-Italian Workshop on Food Biotechnology: Industrial Processing, Safety and Health. Organized by Department of Biotechnology, Patiala University, Patiala. November, 21-23, 2012.
13. Gupta, A. and **Tiwari S.K.** (2012) Probiotic potential of lactic acid bacteria from batter of Dosa (Poster Presentation). International Conference on Microbial World: Recent Innovation

- and Future Trends. 53<sup>rd</sup> Annual Conference of AMI organized by KIIT University, Bhubneswar, Odisha. November, 22-25, 2012.
14. **Tiwari S.K.**, Srivastava S. and Chikindas M.L. (2011) Purification and Characterization of Bacteriocins of Lactic Acid Bacteria: Peptide Modifications and Structure-Function Relationship. (Poster Presentation) Proteomics: New Developments and Grant Challenges. Organized by US HUPO, Raleigh, NC, USA, March 20-23, 2011.
  15. Gupta, A. and **Tiwari, S.K.** (2011). Characterization of bacteriocins produced by different strains of lactic acid bacteria isolated from fermented foods (Poster presentation). 52<sup>nd</sup> Annual Conference of AMI, PU, Chandigarh, Nov. 03 ó 06, 2011.
  16. Gupta, A. and **Tiwari, S.K.** (2011). Characterization of bacteriocins of different sp. of *Enterococcus* (Poster presentation). 6<sup>th</sup> National Conference on Thermodynamics of Chemical and Biological Systems. Organized by Indian Chemical Society, MDU, Rohtak, Nov. 02 ó 04, 2011.
  17. **Tiwari S.K.** (2010). Application of Lactic Acid Bacteria in Food Safety (Oral Presentation) National Symposium on biotechnology in India: Current Status and Future Scope. Organized by Academy of Innovative Research, Jaipur. 30<sup>th</sup> March 2010.
  18. **Tiwari S. K.** (2010) Colloquium on Microbial Technology for Human Benefits (attended), Organized by AMI at M.D. University, Rohtak. 7<sup>th</sup> August, 2010.
  19. **Tiwari S.K.** and Srivastava S. (2009). Purification and Characterization of plantaricin LR14: A Novel Two-Peptide Bacteriocin from *Lactobacillus plantarum* LR/14 (Poster presentation). 50<sup>th</sup> Annual Conference of AMI, National Chemical Laboratory, Pune, December 15-18, 2009.
  20. **Tiwari S.K.** and Srivastava, S. (2009) Plantaricin LR14: A Novel Peptide Antibiotic from *Lactobacillus Plantarum* LR/14" (selected for oral presentation). 3rd Congress of European Microbiologists - FEMS 2009, Gothenburg, Sweden. June 28-July 2, 2009.
  21. **Tiwari S.K.** (2009) Life science Conclave 2009, India: The Emerging Life Science Global Destination, New Delhi (attended), 27-28 August, 2009.
  22. Gupta A. and **Tiwari S.K.** (2008) Industrial Applications of Lactic Acid Bacteria. International Conference on Molecular Biology and Biotechnology: ICMBB-2008, Member of organizing Committee, Banasthali University, Rajasthan. Oct 19-21, 2008.
  23. **Tiwari S.K.** (2008) Jubilee Conference on Women's Education: Vision and Mission of Women's Universities in a Global Society (attended), Banasthali University, Rajasthan. Nov 11-13, 2008.
  24. **Tiwari S.K.** and Srivastava, S. (2008) Purification and Characterization of plantaricin LR14: A Two-Peptide Bacteriocin from *Lactobacillus plantarum* LR/14 (accepted for oral communication) EMBO world lecture course in "Recent Developments in Macromolecular Crystallography" National Chemical Laboratory, Pune, November 9-14, 2008.
  25. **Tiwari S.K.** and Srivastava, S. (2006) A Bacteriocin with Broad Host Range from *Lactobacillus plantarum* LR/14-A Potential Food Biopreservative (accepted for oral communication). The 20th International ICFMH Symposium food safety and food biotechnology: diversity and global impact. Alma Mater Studiorum, Bologna, Italy, Aug 29 - Sept 02 2006.
  26. **Tiwari S.K.** (2005). Characterization and purification of bacteriocin isolated from natural isolate of *Lactobacillus plantarum* LR/14 (Oral presentation). 46<sup>th</sup> Annual Conference of AMI, Osmania University, Hyderabad, Dec. 8-10, 2005.
  27. Srivastava S., Kumar M. and **Tiwari S.K.** (2004). Synthesis and characterization of bacteriocin produced by lactic acid bacteria isolated from rhizosphere. (accepted for oral presentation) 4<sup>th</sup> Asian Conference on Food and Nutrition Safety, Bali, Indonesia, March 2-5, 2004.
  28. **Tiwari S.K.**, Kumar M., and Srivastava, S. (2004). Identification and Characterization of bacteriocins isolated from environmental isolates of *Lactobacillus plantarum* LR/14 and *L. lactis lactis* LR/6 (Poster presentation). Bioconvergence 2004, Thapar Institute of Engineering and Technology, Patiala, Punjab, India, Nov. 18-20 2004.

29. **Tiwari S.K.** and Srivastava, S. (2004). Production and characterization of bacteriocin from an environmental isolate *Lactobacillus plantarum* LR/14 (Poster presentation). 45<sup>th</sup> Annual Conference of AMI, NDRI, Karnal, Nov. 23-25, 2004.
30. Srivastava S., **Tiwari S.K.**, Kumar M., and Viridi J.S. (2003). Probiotic potential of bacteriocin producing environmental isolates of lactic acid bacteria (Poster presentation). International Seminar and workshop on Fermented Foods, Health Status and Social Well-being Institute of Rural Management, Anand, Gujarat, Nov. 13-14, 2003.
31. **Tiwari S.K.**, Kumar M., Srivastava S. and Viridi J.S. (2003). Bacteriocin production by some natural isolates of *Lactobacillus* sp (Poster presentation). Microbes and Human resistance, 44<sup>th</sup> Annual Conference of AMI India, University of Agricultural Sciences, Dharwad, Nov. 12-14, 2003.