Dr. Suman Singh: Professor

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Qualification: M.Sc. (Animal Biochemistry); Ph.D. (Biochemistry)

Specialization: Enzymology, Protein Biochemistry and Probiotics

Other Information:

Employment History:

- Professor (2018-till date), Department of Biochemistry, KUK.
- Associate Professor (2015-2018), Department of Biochemistry, KUK.
- Assistant Professor (2003-2015), Department of Biochemistry, KUK.
- Research Associate (1999) Department of Molecular Genetics, German Institute of Human Nutrition, Potsdam-Rehbrucke, Germany.

Awards and Fellowships:

- Topper in M. Sc. and Ph. D entrance examination of N.D.R.I, Karnal
- Topper with distinction in Masters Programme of N.D.R.I, Karnal
- Junior and Senior Research Fellowships of UGC at K.U, Kurukshetra from 2001-2003.
- Qualified National Eligibility Test (NET) conducted by Indian Council of Agriculture Research (ICAR), New Delhi, India.

Ph.D. Thesis (Supervised)

1. Pooja Attri, Department of Biochemistry, K U K, India
2. Syma Ashraf, Department of Biochemistry, K U K, India
3. Dimpi Gandhi, Department of Biochemistry, K U K, India
4. Preeti Chanalia, Departmtent of Biochemistry, K U K, India
5. Rajeev Kawatra, Department of Biochemistry, K U K, India
6. Poonam Bansal, Department of Biochemistry, KUK, India
7. Raman Kumar, Department of Biochemistry, K U K, India
8. Kapil Dev, Department of Biochemistry, K U K, India

9. Shweta Dhanda, Department of Biochemistry, K U K, India

Ph.D. Thesis (Under Supervision)

1. Praveen Sharma, Department of Biochemistry, KUK, India.
2. Pooja, Department of Biochemistry, KUK, India.
3. Nisha, Department of Biochemistry, KUK, India.

M.Sc. thesis Supervised:

Department of Biochemistry, K U K, India (27 students) (2009 onwards)

Research Projects Completed:

- Molecular cloning and characterization of gene encoding novel dipeptidyl aminopeptidase from goat brain: a functional homologue of DPP-III (Young Scientist Award cum research project awarded by SERC-DST).
- Screening, isolation, purification and characterization of extracellular enzymes from *Pediococcus acidilactici* (UGC, New Delhi).

- Phenotypic, Biochemical and Molecular Characterization of *Pediococcus acidilactici*: a potential Biotherapeutic Agent (Young Scientist Award cum research project awarded by DST, New Delhi).

Invited Speaker in International/National conferences:

- Delivered an invited lecture in "**5th International Conference and Exhibition on Probiotics, Functional and Baby food**" Nov 14-16, 2016, Orlando, USA on the topic "Study of Extracellular enzymes of *Pediococcus acidilactici:* An approach towards understanding of action molecules of probiotic".
- Delivered an invited lecture in **Society of Veterinary Biochemists and Biotechnologists of India And National Symposium On Bridging Biochemical Interventions And Environmental Remediations for One Health Improvement, held** 2-3 November, 2018 at College of Veterinary and Animal Sciences, LUVAS, Hisar, Haryana on the topic "Next Generation Sequencing, Biochemical characterization, Metabolic pathway analysis of novel probiotic *Pediococcus*

acidilactici NCDC 252 and it's evolutionary relationship with other Lactic Acid Bacteria".

- Delivered a **lead lecture** and acted as **expert** in **Biotechnology, Biochemistry & Microbiology section** during 15th & 16th Uttarakhand State Science and Technology Congress (USSTC) 2020-22 held from 22-24 June 2022, Graphic Era University, Dehradun.

Research papers Published:

1. Shweta Dhanda, Praveen Kumar, Poonam Bansal, Jasbir Singh and **Suman Dhanda** (2022). Identification, purification, characterization and biopreservation potential of antimicrobial peptide of Pediococcus acidilactici NCDC 252. *International Journal of Peptide Research and Therapeutics* (Accepted).
2. Raman Kumar, Poonam Bansal, Jasbir Singh and **Suman Dhanda** (2022). Assessment of therapeutic potential of Cell Free Supernatant of Pediococcus acidilactici NCDC 252: a novel potential probiotic of dairy origin. *Research Journal of Biotechnology*. 17, 59-66
3. Poonam Bansal, Raman Kumar, Jasbir Singh and **Suman Dhanda**. (2022). Characterization of starter cultures and nutritional properties of Pediococcus acidilactici NCDC 252: A potential probiotic of dairy origin. *Journal of Food Processing and Preservation, 46*(10), e16817.
4. Poonam Bansal, Jasbir Singh and **Suman Dhanda**. (2022).Computational analysis of peptidoglycan hydrolasegenes in Pediococcus acidilactici D3 genome. *Research Journal of Biotechnology*. 17(10), 86-89.
5. Shweta Dhanda, Parveen Kumar, Manjusha Choudhary and **Suman Dhanda** (2021). In vitro studies on anti-inflammatory, antioxidant and antihyperglycemic activities of potential probiotic Pediococcus acidilactici NCDC 252. *Research Journal of Biotechnology*, 16 (12,) 18-23.
6. Pooja Attri, Druksakshi Jodha, Poonam Bansal, Jasbir Singh and **Suman Dhanda** (2021). Membrane Bound Aminopeptidase B of a Potential Probiotic Pediococcus acidilactici NCDC 252: Purification, Physicochemical and Kinetic Characterization.*International Journal of Peptide Research and Therapeutics. 27, 1641-1655.*

7. Poonam Bansal, Raman Kumar, Phalguni Deswal and **Suman Dhanda** (2020). Computational Identification of Novel Genes in *Pediococcus acidilactici* ZPA017. *Research Journal of Biotechnology*, 15(3), 61-65.
8. Raman Kumar, Poonam Bansal, Sunita Dalal and **Suman Dhanda** (2020). *In silico* analysis and molecular docking studies of potential anti *Helicobacter pylori* compounds.*Research Journal of Biotechnology*, 15(5), 133-136.
9. Dimpi Gandhi, Preeti Chanalia, Poonam Bansal and **Suman Dhanda** (2020). Isolation and physicochemical characterization of peptidoglycan hydrolases of probiotic *Pediococcus acidilactici*. *International Journal of Peptide Research and Therapeutics,* https://doi.org/10.1007/s10989-019-10008-3.26, 2119–2127
10. Poonam Bansal, Raman Kumar, Jasbir Singh and **Suman Dhanda** (2020). Production of extracellular alkaline serine protease from *Pediococcus acidilactici* NCDC 252: Isolation, purification, physicochemical and catalytic characterization. Catalysis letters.151, 324–337
11. Raman Kumar, Poonam Bansal, Jasbir Singh and **Suman Dhanda** (2020). Purification, partial structural characterization and health benefits of exopolysaccharides from potential probiotic *Pediococcus acidilactici* NCDC 252. ***Process Biochemistry***, 99:79-86.
12. Poonam Bansal, Raman Kumar, Jasbir Singh and **Suman Dhanda** (2020). *In silico* analysis of *Pediococcus acidilactici* NCDC 252 genome revealed nineteen novel genes. ***Gene Reports,*** DOI: doi.org/10.1016/j.genrep.2020.100849. 21, 100849.
13. Raman Kumar, Poonam Bansal, Jasbir Singh, **Suman Dhanda** and Jitender Kumar Bhardwaj (2020). Aggregation, adhesion and efficacy studies of probiotic candidate *Pediococcus acidilactici* NCDC 252: A strain of dairy origin. *World Journal of Microbiology and Biotechnology;* 36(1);10
14. Raman Kumar, Poonam Bansal and **Suman Dhanda** (2019). *In* silico Genome-Wide Analysis of the ATP-Binding Cassette Transporter Gene Family in *Pediococcus acidilactici* NCDC 252: A strain of Dairy Origin. *Annals of Biology*. 36(1): 12-14.
15. Poonam Bansal, Raman Kumar, Jasbir Singh and **Suman Dhanda** (2019).Next Generation Sequencing, Biochemical characterization, Metabolic pathway analysis of novel probiotic *Pediococcus acidilactici* NCDC 252 and it's evolutionary relationship with other Lactic Acid Bacteria. Molecular Biology Reports (https://doi.org/10.1007/s11033-019-05022-z). 46(6): 5883-5895.

16. Preeti Chanalia, Dimpi Gandhi, Pooja Attri and **Suman Dhanda** (2018). Purification and characterization of beta-galactosidase from probiotic *Pediococcus acididlactici* and its use in milk lactose hydrolysis and galactooligosaccharide synthesis. Bioorganic Chemistry 77, April, 176-189.
17. Pooja Attri, Druksakshi Jodha, Jasbir Singh and **Suman Dhanda** (2018). Purification, kinetic and functional characterization of membrane bound dipeptidyl peptidase-III from *Pediococcus acididlactici* NCDC 252: a probiotic lactic acid bacteria. Molecular Biology Reports 45, 973-986.
18. Neha Sikri, **Suman Dhanda** andSunita Dalal (2018). Kinetics of urease inhibition by different fractions of *Cassia fistula*.African Journal of Botany 120, 274-279.
19. Rajeev Kawatra, **Suman Dhanda,** Jasbir Singh, Ajay Kumar and Raman Kumar (2018). Role of nanotechnology in advancement, automation and miniaturization of DNA fingerprinting. Annals of Agri-Bio Research 23(1), 11-20.
20. Raman Kumar and**Suman Dhanda** (2017).Mechanistic Insight of Probiotics derived anticancer Pharmaceuticals: A road forward for cancer therapeutics. Nutrition and Cancer 69(3): 375-380.
21. Preeti Chanalia, Dimpi Gandhi, Pooja Attri and **Suman Dhanda** (2017). Extraction, purification and characterization of low molecular weight Proline iminopeptidase from probiotic *L. plantarum* for meat tenderization. International Journal of Biological Macromolecules, December, 109: 651-663. DOI: 10. 1016/j.ijbiomac.2017.12.092.
22. Tejinder Pal Khaket, **Suman Dhanda**, Druksakshi Jodha and Jasbir Singh (2016). Biochemical studies on dipeptidyl peptidase I (cathepsin C) from germinated *Vigna radiata* seeds. Process Biochemistry. 51: 1015-1027.
23. Syma Ashraf Waiz, Mohammad Raies-ul-Haq, **Suman Dhanda**, Anil Kumar, T. Sridhar Gond, M.S. Chauhan, R.C. Upadhyay (2016). Heat Stress and antioxidant enzyme activity in bubaline (Bubaline bubalis) oocytes during in vitro maturation. International Journal of Biometerology, 60(9): 1357-1366.
24. Preeti Chanalia, Dimpi Gandhi, Raman Kumar, Pooja Attri and **Suman Dhanda** (2016).Lactic acid production visa-a-vis biowaste management using lactic acid bacteria. World applied Science Journal 34(11): 1542-1552.
25. Rajeev Kawatra, G. Pandu, **Suman Dhanda**, Davender Kumar, Tejinder Pal Khaket. Study of Genetic Polymorphism of 15 autosomal STR loci in three endogamous

populations of Haryana, India. Current Trends in Biotechnology and Chemical Research Vol.5 (2).

26. Raman Kumar, Preeti Chanalia, Dimpi Gandhi, **Suman Dhanda**, Rakhi (2016).Optimized extraction and characterization of Pectin from gooseberry and Strawberry pomace validated by Response Surface Methodology. World applied Science Journal. 34(6): 704-713.
27. Dimpi Gandhi, Preeti Chanalia, Pooja Attri and **Suman Dhanda** (2016). Dipeptidyl peptidase-II from probiotic *Pediococcus acidilactici*: Purification and functional characterization. International Journal of Biological Macromolecules 93(A):919-932.
28. Tejinder Khaket, Davender Redhu, **Suman Dhanda**, Jasbir Singh (2015).*In silico* evaluation of potential DPP-III inhibitor precursors from dietary proteins. International Journal of Food Properties. 18: 499-507.
29. Pooja Attri, Tejinder Pal Khaket, Drukshakshi Jodha, Jasbir Singh and **Suman Dhanda**)2015(*. Biochemical and kinetic characterization of DING from the probiotic *Pediococcus acidilactici.* Applied Biochemistry and Biotechnology. 175: 1092-1110.
30. Tejinder Pal Khaket, Himanshu Aggarwal, Drukshakshi Jodha, **Suman Dhanda** andJasbir Singh (2015). Parthenium hysterophorus in current Scenario: a toxic weed with industrial, agricultural and medicinal applications. Journal of Plant Sciences, doi:10.3923/jps.2015.
31. Tejinder Pal Khaket, **Suman Dhanda**, Druksakshi Jodha and Jasbir Singh (2015). Purificcation and biochemical characterization of Dipeptidyl peptidase II (DPP7) homologus from germinated *Vigna radiata* seeds. Bioorganic chemistry. 63:132-141.
32. Syma Ashraf Waiz, Syed Mohammad Shah, Neha Saini, **Suman Dhanda,** M. K. Singh, M S Chauhan and R C Upadhyay (2014). Developmental competence and expression pattern of bubaline (Bubalus bubalis) oocytes subjected to elevated temperature during meiotic maturation *in vitro.*Journal of Assisted Reproduction and Genetics DOI 10.1007/s10815-014-0275-3.
33. Pooja Attri, Drukshakshi Jodha, Dimpi Gandhi, Preeti Chanalia and **Suman Dhanda**)2014(*. *In Vitro* evaluation of *Pediococcus acidilactici* NCDC 252 for its probiotic attributes. International Journal of Dairy Technology. 68 (4) 533-542.
34. Tejinder Pal Khaket, Viney Kumar, Jasbir Singh and **Suman Dhanda**)2014(*. Biochemical and physiological Studies on the effects of senescence leaves of *Populus*

deltoides on *Triticum vulgare*. The Scientific World Journal, 126051, 7 pages, 2014. doi:10.1155/2014/126051.

35. Vandana Moudgil,Davender Singh Redhu**, Suman Dhanda**, Jasbir Singh* (2013). A Review of Molecular Mechanisms in the Development of Hepatocellular Carcinoma by Aflatoxin, Hepatitis B and C Viruses. J Environ Pathol Toxicol & Oncology 32(2):165-175, 2013.
36. Tejinder Pal Khaket, Jasbir Singh, Pooja Attri, **Suman Dhanda**)2012(*. Enkephalin degrading enzymes- metalloproteses with high potential for drug development. *Current Pharmaceutical Design* 18, 2, 220-230.
37. Tejinder Pal Khaket, Pardeep Grewal, **Suman Dhanda** and Jasbir Singh* (2012). Effect of water deficit stress on storage proteins of *cynodon dactylon*. National Journal of Basic and Applied Sciences (NJBAS), 1, 41-46.
38. Pooja Attri, Drukshakshi Jodha, Jasbir Singh and **Suman Dhanda**)2012. (* An improved protocol for rapid extraction of membrane enzymes from Gram positive bacteria. Anal. Methods, 4, 2574.
39. Davender, Pooja Attri, Jasbir Singh, A.K Puniya and **Suman Dhanda**)2012(*. SDS-PAGE analysis of membrane and extracellular proteins of vancomycin resistant *pediococcusacidilactici*. Annals of Biology, 28(1), 9-11.
40. Pooja Attri, Drukshakshi Jodha, Dimpi Gandhi and **Suman Dhanda**)2012. (* Screening of intracellular, extracellular and membrane bound exopeptidases in Lactic Acid Bacteria (LAB). *Milchwissenschaft* - Milk Science International, 67(4), 421-424.
41. Tejinder Pal Khaket, Mangal Singh Telvinder **Suman Dhanda**, Jasbir Singh (2012). Biochemical characterization of consortium compost of toxic weeds *Parthenium hysterophorus* and *Eichhornia crassipe*. Bioresource Technology. *123*, *360-365*
42. **Dhanda Suman** and Atreja S.K. (2011).Fatty acyl chains of phosphatidyl choline and ethanolamine as diacyl, alkyl and alkenyl forms during *in vitro* capacitation of goat (Capra *hircus*) spermatozoa. *Ind. J. Ani. Sciences*, 81(2), 127-132.
43. **Dhanda Suman***, Singh Jasbir, Singh Hari (2011). Interaction of goat brain enkephalin degrading enzymes with analgesic and antihypertensive drugs. *Medicinal ChemistryResearch* 20: 1294-1297.
44. Attri Pooja, Singh Jasbir, **Dhanda Suman***, Singh Hari (2011). Activity staining and inhibition characterization of dipeptidylpeptidase-III from goat brain. Enzyme Research doi:10.4061/2011/897028.

45. **Dhanda Suman** and Singh Hari (2010). Distribution of dipeptidylpeptidase III homologue in the brain and vital organs in goat*(Capra hircus)*. *Ind J Ani Sciences*, 80 (7), 715-718.
46. **Dhanda Suman***, Singh Jasbir, Singh Hari (2008). Hydrolysis of various bioactive peptides by goat brain dipeptidylpeptidase-III homologue. Cell Biochemistry and Function, 26(3), 339-45.
47. **Dhanda Suman***, Singh Hari, Singh Jasbir and Singh Tej P. (2008). Functional characterization and specific effects of various peptides on enzymatic activity of DPP-III homologue from goat brain. Journal of Enzyme Inhibition and Medicinal Chemistry, 23(2), 174-81.
48. **Dhanda Suman**, Singh Hari, Singh Jasbir and Singh T.P. (2007). Isolation, purification and characterization of a DPP-III homologue from goat brain. Protein Expression and Purification 52(2), 297-305.
49. Singh Jasbir, **Singh Suman**, Sharma Rajeshwar, Dani HM and Steinberg Pablo (2005). Interactions of aflatoxins B1 with SRP components can disrupt protein targeting. Cell Biochemistry and Function, 23, 9-13.
50. Dani HM, Singh Jasbir and **Singh Suman** (2003). Recent advances in the structure and functions of SRP in controlling protein targeting and translocation. J. Biol. Regul Homeo Agents. 303
51. **Singh Suman** and Atreja S. K. (2000). Effect of platelet activating factors (PAF) on phospholipase A_2 (PLA_2) activity of goat spermatozoa. Indian Journal of Dairy Science, 53 (2); 143-146.
52. **Singh Suman** and Atreja S. K. (1999). Distribution and changes of alkyl, alkenyl and diacyl phospholipids during *in vitro* capacitation and acrosome reaction of goat spermatozoa. Indian Journal of Dairy Science, 52 (4); 237-242.

Books:

Eight volumes of Encyclopedia of Biotechnology published by Vista International Publishing House, Delhi (India), 2009

53. Jasbir Singh and Suman Dhanda, Encyclopedia of Biotechnology, volume 1, entitled as Animal Biotechnology.
54. Jasbir Singh and Suman Dhanda, Encyclopedia of Biotechnology, volume 2, entitled as Applied Biotechnology.

55. Jasbir Singh and Suman Dhanda, Encyclopedia of Biotechnology, volume 3, entitled as Aquaculture Biotechnology.
56. Jasbir Singh and Suman Dhanda, Encyclopedia of Biotechnology, volume 4, entitled as Biotechnology in Agriculture Science.
57. Jasbir Singh and Suman Dhanda, Encyclopedia of Biotechnology, volume 5, entitled as Biotechnology in Food Science.
58. Jasbir Singh and Suman Dhanda, Encyclopedia of Biotechnology, volume 6, entitled as Crop Biotechnology.
59. Jasbir Singh and Suman Dhanda, Encyclopedia of Biotechnology, volume 7, entitled as Environmental Biotechnology.
60. Jasbir Singh and Suman Dhanda, Encyclopedia of Biotechnology, volume 8, entitled as Microbial Biotechnology.

Chapter for books

1. Singh Jasbir, Singh Suman and Pahal Vikas (2007) RNA interference: A Therapeutic Tool. Applications of Biotechnology, Aaviskar Publishers, Distributors, Jaipur (Raj).
2. Tejinder Pal Khaket, Himanshu Aggarwal, Suman Dhanda, Jasbir Singh (2014). Enzyme Informatics in Industrial Enzymes: Trends, Scope and Relevance from series Biotechnology in Agriculture, Industry and Medicine; Editors- Vikas Beniwal and Anil Kumar Sharma; Nova Publications, USA (Press).