Curriculum Vitae

DR. BALWINDER SINGH SOOCH

Professor and Head
Department of Biotechnology & Food Technology,
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➢ Additional Responsibilities

Professor-IPRs Chair (Estd. by Ministry of Commerce & Industry, GoI)
Deputy Coordinator, IPRs and Technology Transfer Cell, Punjabi University, Patiala
RUSA-Coordinator, Punjabi University, Patiala

➢ EDUCATIONAL QUALIFICATIONS:

- **M.Sc. , Ph.D. (Biotechnology), LL.B. (IPRs), MBA, PG Dip. in Journalism and Mass Communication, PGDCA**
- **UGC-CSIR (NET)**
- **General Course on Intellectual Property** from WIPO, Geneva
- **Registered Patent Agent,** Patent Office, Govt. of India
- **Trained Technology Transfer Professional** (Through National Biopharma Mission, DBT, GoI)

➢ Past Position:

- Worked as **Scientist** in Patent Information Centre (Established by Patent Facilitating Centre, TIFAC, Department of Science and Technology, Govt. of India, New Delhi and Govt. of Punjab) at Punjab State Council for Science and Technology, Chandigarh from 2000 to Dec-2006.

➢ Professional recognition, awards, fellowships:

- **SDG (Sustainable Development Goals) Action Award**, 2021 by UNDP, DGCC-Pb for research on development of biodegradable food package
- **DCS Award** by **International Union of Food Science and Technology (IUFoST),** at **Montreal, Canada in 2014.**
- **State Academic Coordinator** (Punjab), National Children Science Congress (NCSC), PAN India Programme of NCSTC, **DST, Govt. of India** (2006-2020)
- **Member, National Academic Committee,** National Children Science Congress (NCSC), PAN India Programme of NCSTC**, DST, Govt. of India** (Since Decemebr-2020)
- **Associate Editor, Nirantar Soch** (Punjabi Science Magazine), Punjab State Council for Science and Technology, Govt. of Punjab Undertaking.
- **General Secretary,** Biotech Research Society of India, (Punjabi University Chapter)
- **Member,** Post graduate and Undergraduate Board of Studies (For Framing Course Curriculum), Faculty of Life Sciences, Punjabi University, Patiala, Marta Gujri College, Fatehgarh Sahib, Sri Guru Teg Bahadur Khalsa College, Anandpur Sahib
- **Member,** Departmental Research Board, Punjabi University, Patiala.
- **Programme Officer,** NSS Open Unit, Punjabi University, Patiala.
- **Life Member:** Biotech Research Society of India, Punjab Science Congress, Association of Microbiologists of India, Indian Science Congress Association.

➢ Outreach Activities

- Delivered more than 200 lectures on various Universities/ Institutes, Colleges and schools on various issues related to Basic Science, Biotechnology, IPRs, Motivation, Career counseling and social evils in Punjab, Haryana, Chandigarh, Himachal, Rajsthan and Uttranchal.

- Associated as Panel/Jury member for various science communication programmes with Pushpa Gujral Science City, Kapurthala

➢ Completed Research Projects

1. Development of Enzyme Based Ecofriendly Bioconversion Process for the Preparation of Xylitol. **Major Research Project-UGC,** Rs. 11.60 Lacs (As Principal Investigator).
2. Development of Processes for Production, Downstream Processing and Applications of Oligosaccharide Producer Enzymes. **Major Research Project-DBT,** Rs. 70.67 Lacs (As Co-Investigator).

➢ Patents Granted/Applications

1. Singh, R.S., **Sooch, B.S** and Puri, M. (2015). An improved process for inulinase production. Patent No. 265023.

2. **Sooch, B.S.** and Kauldhar, B.S. (2021). An Improved Process for Immobilization of Catalase onto Functionalized Polymer and its Use Thereof. Patent No. 359712.

3. Sooch, B.S. and Kauldhar, B.S. (2014). A process for hyperproduction of catalase enzyme from novel extremophilic bacterium *Geobacillus extremocatsoochus* MTCC 5873 and strain thereof. Indian Patent Application No. 362/DEL/2014.

4. Sooch, B.S., Lugani, Y. (2018). A Process for Biotechnological Production of Xylitol. Punjabi University, Patiala (Assignee). Patent Application No. 201811031769

5. Sooch, B.S., Mann, M.K. (2020). A Biodegradable Nanoreinforced Active Food Packaging System and Method of Preparation thereof. Punjabi University, Patiala (Assignee). Patent Application No. 202011020848

➢ Selected Publications

1. **Sooch, B.S,** Kauldhar, B.S. and Puri, M (2014). Recent insights into microbial catalases: Isolation, Production and Purification. *Biotechnology Advances* 32(8):1429-1447. **Impact Factor 16**

2. Mann, M.K. and **Sooch, B.S.** (2021). Biodegradable nano-reinforced packaging with improved functionality to extend the freshness and longevity of Plums *(Oemleria cerasiformis). Scientific Reports* 13: 14583. **Impact Factor 4.6**

3. **Sooch, B.S,** and Mann, M.K. (2021). Nanoreinforced biodegradable gelatin based active food packaging film for the enhancement of shelf life of tomatoes (*Solanum lycopersicum* L.) *Food Control*. *https://doi.org/10.1016/j.foodcont.2021.108322* **Impact Factor 6.0**

4. Lugani, Y. and **Sooch, B.S.** (2020). Fermentative production of xylitol from a newly isolated xylose reductase producing *Pseudomonas putida* BSX-46 *LWT Food Sci. Technol.* 134:109988 (1-8). **Impact factor 6.0**

5. Lugani, Y. Singh, J. and **Sooch, B.S.** (2021). Scale-up process for xylose reductase production using rice straw hydrolysate. *Biomass Conversion and Biorefinery.* https://doi.org/*10.1007/s13399-021-01449-2*. **Impact Factor:4.987**.

6. Kauldhar, B.S., **Sooch, B.S**., Rai, S.K., Kumar, V. and Yadav, S.K. (2021). Recovery of nanosized silica and lignin from sugarcane bagasse waste and their engineering in fabrication of composite membrane for water purification. *Env. Sci. Pollut. Res. 28, 7491-7502*. **Impact Factor 5.8**

7. **Sooch, B.S**., Mann, M.K. and Sharma, M. (2020). Metal-doped barium sulphate nanoparticles decorated with gelatin as antibacterial agents. *Journal of Clust. Sci. https://doi.org/*10.1007/s10876-020-01878-5. **Impact Factor 3.061**

8. Lugani, Y. and **Sooch, B.S.** (2021). Recent insights, applications and prospects of xylose reductase:a futuristic enzyme for xylitol production. *European Food Research and Technology*. 247(4), 921-946. **Impact Factor: 3.4**

9. Warraich, A.S., Krishnamurthy, S.L., **Sooch, B.S.,** Vinaykumar, N.M., Dushyanthkumar, B.M., Bose, J. and Sharma, P.C. (2020). Rice GWAS reveals key genomic regions essential for salinity tolerance at reproductive stage. *Acta Physiol. Plant.* 42: 134. **Impact Factor 2.354.**

10. Kauldhar, B.S. and **Sooch, B.S**. (2016). Tailoring nutritional and process variables for hyperproduction of catalase from a novel isolated bacterium *Geobacillus* sp.BSS-7. *Microb. Cell. Fact*. 15(7): 1-16. **Impact Factor 6.3**

11. **Sooch, B.S**., Kauldhar, B.S. and Puri, M. (2016). Isolation and polyphasic characterization of a novel hyper catalase producing thermophilic bacterium for the degradation of hydrogen peroxide. *Bioprocess Biosyst. Eng*. 39(11):1759-73. **Impact Factor 3.210**

12. Kauldhar, B.S., Dhau, J.S., and **Sooch, B.S**. (2016). Covalent linkage of alkalothermophilic catalase onto functionalized cellulose. *RSC Adv.* 6(45): 39364-39375. **Impact Factor 3.361**

13. Lugani, Y. Kauldhar, B.S., Kaur, N. and **Sooch, B.S.** (2019). Phenotypic characterization and synthesis of extracellular catecholase from a newly isolated bacterium *Pseudomonas* sp. BSC-6. *Braz. Arch. Biol. Technol*. 62: e19180360 (1-13). Impact Factor 0.77.

14. **Sooch, B.S**. and Kauldhar, B.S. (2015). Development of an eco-friendly whole cell based continuous system for the degradation of hydrogen peroxide. *J. Bioprocess. Biotech*. 5: 1000233/1-5.

15. Lugani, Y., Singla, R. and **Sooch, B.S.** (2015). Optimization of cellulase production from newly isolated *Bacillus sp. Y3. J. Bioprocess. Biotech.* 5 (11): 26.

16. Dhau, J.S., Singh, A., Singh, A., **Sooch, B.S.** (2014). A study on antioxidant activity of pyridylselenium compounds and their slow release from poly (acrylamide) hydrogels. *Phosphorous, Sulfur Silicon Related Elements.* 189(5):687-699. **Impact Factor 1.046**

17. Dhau, J.S., Singh, A., Singh, A., **Sooch, B.S.,** Brandao, P., Felix, V. (2014) Synthesis and antibacterial activity of Pyridylselenium compounds: Self assembly of Bis (3-bromo-2-pyridyl) diselenide via intermolecular secondary and pi-pi stacking interactions. *J. Ogranometallic. Chem.* 766:57-66. 2.369 . **Impact Factor 2.369**

18. Tomar, A. K, **Sooch, B.S.,** Singh, S. and Yadav, S. (2013). Aggregation analysis of Concanavalin A binding proteins of human seminal plasma: A dynamic light scattering study. *Int. J. Biol. Macromol.* 53:133-137. **Impact Factor 6.953**

19. Tomar, A. K, **Sooch, B.S.,** Raj, I., Singh, S. and Yadav, S. (2013). Interaction analysis identifies semenogelin I fragments as new binding partners of PIP in human seminal plasma. *Int. J. Biol. Macromol.* 52 (1):296-299. **Impact Factor 6.953**

20. **Sooch, B.S** and Kauldhar, B. S. (2013). Influence of multiple bioprocess parameters on production of lipase from *Pseudomonas* sp. BWS-5. *Braz. Arch. Biol. Technol.* 56(5):711-721. Impact Factor 0.77.

21. Bedi, N., Bedi, P.M.S., **Sooch, B.S.** (2013). Patenting and R&D in Indian pharmaceutical industry: Post-TRIPS Scenario. *J. Intellect. Property. Rights.* 18(2):105-110.

22. Tomar, A. K, **Sooch, B.S.,** Singh, S. and Yadav, S. (2012). Differential proteomics of human seminal plasma: A potential target for searching male infertility marker proteins. *Proteomic Clin Appl.* 6(3-4):147-151. **Impact Factor 3.476**

23. Tomar, A. K, **Sooch, B.S.,** Singh, S. and Yadav, S. (2012). Quantification Studies in human seminal plasma samples identify prolactin inducible protein as a plausible marker of azoospermia. *Biomarkers*. 17(6):545-551. **Impact Factor 2.07**

24. Dhau, J.S., Singh, A. Singh, A., **Sooch, B.S.,** Brandao, P. and Felix, V. (2012). Synthesis characterization and X-ray structure of 3,4-lutidinyl-, 3-/4-picolyl- and pyridylselenium compounds. *Inorganica Chemica Acta.* 392:335-344. **Impact Factor 2.545**

25. Tomar, A. K, **Sooch, B.S.,** Yadav, S. (2011). Computational analysis of Concanavalin A binding glycoproteins of human seminal plasma. *Bioinformation.* 7(2):69-75.

26. Tomar, A. K, **Sooch, B.S.,** Raj, I., Singh, S., Singh, T. P. and Yadav, S. (2011). Isolation and identification of Concanavalin A binding glycoproteins from human seminal plasma: A step towards identification of male infertility marker proteins. *Disease Markers.* 31:379–386. **Impact Factor 3.434**

27. Tomar, A. K, Saraswat, M., **Sooch, B.S.,** Singh, S. Singh, T. P. and Yadav, S. (2010). Prediction of Heparin binding sites on Human Serum Albumin, Matrix Metalloproteinase-2 and DNA Topoisomerase1. *International J. Bio Sci. Technol.* 3(1):21-26.

28. Singh, R.S. and **Sooch, B.S.** (2009). High cell density reactors in production of fruit wines with special reference to Cider- An overview. *Nat. Prod. Rad.* 8(4):323-333.

29. Tomar, A. K, Saraswat, M., Chhikara, N., Kumar, S., Yadav, V.K., **Sooch, B.S.,** T. P. and Yadav, S. (2010). Differential proteomics of sperm: insights, challenges and future prospects. *Biomarkers Med.* 4(6):905–910. **Impact Factor 2.581**

30. Singh, R. S., **Sooch, B. S.,** Kaur, Kamaljit and Kennedy, J. F. (2004). Optimization of parameters for citric acid production from cheddar cheese whey using *Metschnikowia pulcherrima* NCIM 3108. *J.Biol. Sci.* 4(6):700-705. **Impact Factor 4.8**

31. Singh, R.S., Sooch, B.S. and Puri, Munish. (2007). Optimization of medium and process parameters for the production of inulinase from a newly isolated *Kluyveromyces marxianus* YS-1. *Biores. Technol*. **98(13):** 2518-2525. . **Impact Factor 9.642**

➢ Book Chapters in International Books

1. Mann, M.K. and **Sooch, B.S.** (2020). Emerging trends in food industry waste valorization for bioethanol production. In: Vema, P.(ed.). Biorefineries: A Step Towards Renewable and Clean Energy, Springer Nature, Switzerland, p. 57-92.

2. Lugani, Y., **Sooch, B.S.,** Singh, P. and Kumar, S. (2020).Nanobiotechnology applications in food sector and future innovations. In: Ray, R.C. (ed.). Microbial Biotechnology in Food and Health., Elsevier Inc, p. 197-225

3. Lugani, Y., **Sooch, B.S.**, Dheeran, V. and Kumar, S. (2020). Microbial production of xylitol: A cost effective approach. In: Thatoi, H., Mohapatra, P.K.D., Mohapatra, S., Mondal, K.C. (eds.). Microbial Fermentation and Enzyme Technology, CRC Press/Taylor & Francis, Florida USA, p: 227-256.

4. **Sooch B.S.,** Lugani ,Y. and Singh, R.S. (2019). Agro-industrial lignocellulosic residues for the production of industrial enzymes. In: Yadav, M., Kumar, V., Sehrawat, N. (eds.). Industrial Biotechnology: Plant Systems, Resources and Products, De Gruyter STEM, Germany, p. 31-50.

5. Lugani ,Y. Ramana, V.V. and **Sooch B.S.** (2021). Nanotechnology: Emerging opportunities and regulatory aspects in water treatment. In: Kumar, R., Chaudhary, S. (eds.). Advanced Functional Nanoparticles "Boon Or Bane" for Environment Remediation Applications, Springer Nature, Switzerland (in press)..

6. **Sooch, B.S.** and Lugani ,Y. (2021). Role of microbes in synthesis of industrial products from lignocellulosic materials. In: Singh, N.K., Chattopadhyay, A., Lichtfouse, E. (eds.). Microbial Processes in Agriculture : Series Sustainable Agriculture Reviews, Springer Nature, Switzerland, p. (in press).

7. Lugani, Y., **Sooch, B.S.** and Kumar, S. (2019). Biochemical Strategies for Enhanced Biofuel Production. In: Rastegari, A.A., Yadav, A.N., Gupta, A. (eds.). Prospects of Renewable Bioprocessing in Future Energy Systems, Springer Nature, Switzerland, p. 51-87..

8. Lugani, Y. and **Sooch, B.S.** (2018). Insights into fungal xylose reductases and its applications in xylitol production. In: Kumar, S., Dheeran, P., Taherzadeh, M., Khanal, S. (eds.). Fungal Biorefineries, Springer Nature, Switzerland, p. 121-144.

9. **Sooch, B.S**., Kauldhar, B.S. and Puri, M. (2016). Catalases: Types, structure, applications and future outlook. In: *Microbial Enzyme Technology & Food Applications*. Ray, R.C., Rosell, C.M (Eds.). CRC Press/ Taylor Francis. P. 241-254.

10. **Sooch, B.S.**, Mann, M.K., Singh, R.S. (2016). Current insights into proteomics of biofuel crops and cyanobacteria. In: *Biofuels: Production and Future Perspectives*. Ram, S.S., Ashok, P., Edgard, G. (Eds.). CRC Press/Taylor & Francis p: 511-531.
