

CURRICULUM VITAE

Dr. SURESH KUMAR BUNKER

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ACADEMIC QUALIFICATIONS

EXAM PASSED	BOARD/UNIVERSITY	YEAR OF PASSING	% OF MARKS
Post-Graduation (Biotechnology)	Utkal University, Odisha, India	2008	70
CSIR-UGC NET JRF/ SRF),	CSIR	2008	-
Ph.D. (Biotechnology)	Utkal University, Odisha, India	2019	Awarded
Post Doctoral Fellow (PDF)	P. G. Department of Zoology, University of Rajasthan	Presently	-

Title of the Ph. D. Thesis: “Effects of 6-n-propyl-2-thiouracil, a thyroid disrupting drug, on male rat liver: A study on catalase and DNA binding proteins”.

ACHEIVEMENTS/ FELLOSHIPS/TRAINING AWARDED

- ❖ Qualified the **Biotech Industrial Training Programme (BITP)**, Supported by Department of Biotechnology (DBT), Ministry of Science and Technology, Govt. of India, in Biotechnology, 2008.
- ❖ Qualified the Joint **CSIR-UGC Test for Junior Research Fellowship and National Eligibility Test for Lectureship (NET)** in Life Sciences, 2008.
- ❖ Qualified the **Graduate Aptitude Test in Engineering (GATE)** in Life Sciences, 2008.
- ❖ Qualified the **National level Combined Biotechnology Entrance Examination (CBEE) for M. Sc.** In Biotechnology, Organized by Jawaharlal Nehru University (JNU), New Delhi, India, 2006.

RESEARCH EXPERIENCE (Training / Projects)

- ❖ **Ph.D. at P. G. Department of Biotechnology, Utkal University, Bhubaneswar, Odisha, India.**

CSIR-UGC Junior Research Fellow- From 17th February 2010 to 17th February 2012.

CSIR-UGC Senior Research Fellow- From 17th February 2012 to 16th February 2015.

Worked on “**Effects of 6-n-propyl-2-thiouracil, a thyroid disrupting drug, on male rat liver: A study on catalase and DNA binding proteins**”.

- ❖ **P. G. Department of Biotechnology, Utkal University, Bhubaneswar, Odisha, India, 2009-10.** Worked for nine months (from 20.05.2009 to 16.02.2010) as a Research Fellow, on “Purification and characterization of thermostable Superoxide dismutase (SOD) from abdominal muscle tissue of mud crab (*Scylla Serrata*)”.

- ❖ **Juan Biotechnology Pvt. Ltd., Bhubaneswar, Odisha, India, 2008-2009.** Six months Biotech Industrial Training Programme (BITP) on “DNA profiling of tissue culture Banana Varieties” from 17.11.2008 to 16.05.2009.

- ❖ **P. G. Department of Biotechnology, Utkal University, Bhubaneswar, Odisha, India, 2008.** Internal Project: Worked for 6 months on “Purification and partial characterization of thermostable Superoxide dismutase from abdominal muscle tissue of mud crab (*Scylla Serrata*)”.

- ❖ **P. G. Department of Zoology, Christ Church College, Kanpur, India, 2007.**
Internal Training: Worked for one month for summer training on “Histological techniques and histochemical demonstration of biochemical substances ‘*in situ*’ in mammalian tissues.

Summary of Ph. D. work

My Ph.D. thesis work is mainly focused on effects of PTU, on expression of hepatic catalase gene, its promoter methylation and expressions of DNA binding proteins such as DNMT1, DNMT3a, DNMT3b, MBD4, MeCP2, Gadd45a and some other proteins such as p53, PCNA and C/EBP- β in rat liver (*Rattus norvegicus*), under different experimental hypothyroid conditions. PTU is a thynomide compound that induces reaction in circulating TH due to inhibition of thyroperoxidase and peripheral deiodinase which converts thyroxin (T_4) to triiodothyronine (T_3) and caused severe hepatotoxicity, liver failure and death. Earlier studies from our laboratory have shown that thyroid hormone plays a decisive role in the expressions of many hepatic antioxidant defence enzymes such as superoxide dismutase, catalase and glutathione peroxidase. Since DNA methylation of promoter region, plays a cardinal role in chromatin architecture, histone modification and thereby governing gene expression. Catalase is an important enzyme of antioxidant defence system and have higher degree of sensitivity towards the experimental PTU-induced hypothyroid condition in rats.

To check the effects of PTU on methylation status of promoter region of catalase and expression of DNA binding proteins along with catalase expression in rat liver, we have designed two independent experiments. In the Ist experiment we have investigate the effects of PTU at neonatal and adult stages by PTU treatment from birth to adulthood (90 days). In the IInd approach adult rats were exposed to PTU along with curcumin for 30 days. In both the experiments, we found that PTU permanently change the methylation status of hepatic catalase gene and alters expressions of different DNA binding proteins with downregulation of expression of catalase. We also found that PTU also affects the expression of p53, PCNA and C/EBP- β in liver.

MAJOR TOOLS AND TECHNIQUES KNOWN

(A) Molecular Biology Techniques

1. Isolation and quantification of DNA and RNA.
2. Restriction enzyme digestion of genomic DNA/ λ DNA
3. Real- Time PCR, and reverse transcriptase PCR, c-DNA synthesis, Primer designing
4. DNA Methylation study tools such as Bisulfite sequencing, Methylation specific primer PCR and methylation specific restriction enzyme digestion.

5. Western Blotting
6. ChIP (Chromatin Immunoprecipitation Assay)

(B) Biochemical techniques (Spectrophotometric methods)

1. Protein estimation (Lowry and Bradford method)
2. Enzyme activity assay (Superoxide dismutase, Catalase, Glutathione peroxidase, Glutathione reductase, Glutathione-s-transferase)
3. Oxidative stress indices (lipid peroxidation, Hydrogen peroxide)
4. Non-enzymatic small antioxidants (Glutathione, Ascorbic acid)
5. Antioxidant enzyme staining

(C) Other techniques

1. Sonication
2. Histology (Tissue processing)
3. Immunohistochemistry
4. Alkaline DNA unwinding assay (Comet assay)
5. Protein purification
6. Plasmid Isolation
7. DNA fragmentation assay

ATTENDED SEMINARS /CONFERENCES/SYMPOSIUMS

1. Presented Poster In: “83rd Annual meeting of the Society of Biological Chemists of India”, on “Neonatal Persistent Hypothyroidism Modulates Rat Hepatic DNA Methyltransferase 3b (DNMT 3b) Expression in Adulthood. **17th to 21st December, 2014**, Odisha, India.
2. Attended “National Symposium On Emerging Trends In Biotechnology: Present Scenario And Future Dimensions”. **29th - 30th March 2014**, Odisha, India.
3. Attended three days course on Real Time PCR. **13th to 15th January 2014**, at Life Technologies Training Centre, Gurgaon, India.
4. Attended “1st Meeting of Indian Immunological Society-Odisha Chapter” **11th August 2012**, at NISER, Odisha, India.
5. Attended “99th The Indian Science Congress Association”. **3rd to 7th January 2012** at KIIT University, Bhubaneswar, Odisha, India.
6. Attended “Indian Science Congress Association: Bhubaneswar Chapter: 12th Orissa Bigyan Congress”. **5th -6th December, 2009**, at Regional Museum Natural History Bhubaneswar, Odisha, India.

7. Attended “Seminar-cum Workshop on “Freshwater algae and their utilization”. **18th - 19th March 2007**, at P.G. Department of Biotechnology Utkal University Bhubaneswar, Odisha. India.

PUBLICATIONS

1. **Bunker SK**, Dutta A, Pradhan J, Dandapat J, Chainy GBN (**2018**), Curcumin Restores Hepatic Epigenetic Changes in Propylthiouracil (PTU) Induced Hypothyroid Male Rats: A Study on DNMTs, MBDs, GADD45a, C/EBP- β AND PCNA . Food Chem Toxicol (123) 169-180.
2. **Bunker SK**, Dandapat J, Chainy GBN, Sahoo SK, Nayak PK (**2017**), Neonatal Exposure to 6-n-Propyl-Thiouracil, an Anti-Thyroid Drug, Alters expression of Hepatic DNA Methyltransferase and Methyl CpG- Binding Proteins Gadd45a, p53 and PCNA in adult rats. Eur Thyroid J. 6 (6) 281-291.
3. Jena S, **Bunker SK**, Dandapat J, Chainy GBN (**2017**), Age Related Changes In Rat Kidney Antioxidant Enzymes And Oxidative Stress Parameters With Special Reference to Catalase Promoter Methylation Pattern. Topics in Biomedical Gerontology (Book Chapter) Pp 141-160.
4. **Bunker SK**, Dandapat J, Sahoo S, Roy A, Chainy GBN Chainy (**2016**), Neonatal Persistent Exposure to 6-Propyl-2-Thiouracil, a Thyroid Disrupting Chemical, Differentially Modulates Expression of Hepatic Catalase And C/EBP- β in Adult Rats”. J Biochem Mol Toxicol 30:80-90
5. **Bunker SK**, Dandapat J, Chainy GBN (**2015**), Age-Related Decrease In Rat Liver Catalase Expression is Associated With Changes in Its Promoter Methylation Pattern. Currents Trends in Biotechnology and Pharmacy 9(1):88-96

Abstracts: NATIONAL / INTERNATIONAL CONFERENCE / NATIONAL SEMINAR Dandapat J, **Bunker SK**, Chainy GBN. “Promoter methylation leads to down regulation of hepatic catalase gene in hypothyroid rats”. In: 15th ISANH International conference on oxidative stress reduction, redox homeostasis and antioxidants. June 22-24th 2015, Organized by Institut Pasteur, Paris, France.

1. **Bunker SK**, Chainy GBN and Dandapat J. “Neonatal persistent hypothyroidism modulates rat hepatic DNA methyltransferase 3b (DNMT 3b) expression in adulthood. In: 83rd Annual Meeting of the Society of Biological Chemist of India. 17-21th December 2014. Organized By KIIT University Bhubaneswar, Institute of Life Sciences, Bhubaneswar and NISER Bhubaneswar, Odisha, India.
2. Chainy GBN, **Bunker SK**, and Dandapat J. “Down Regulation of hepatic catalase in PTU- induced hypothyroid rats is due to promoter methylation. In: 84th Annual Session of The National Academy of Sciences, India. 04-06th December 2014. Organized by Jai Narayan Vyas University Jodhpur (B/85/2014), India.
3. **Bunker SK**, Chainy G.B.N. and Dandapat J., “PTU-induced neonatal hypothyroidism modulates methylation pattern of catalase promoter in rat liver”. In: International Symposium on Genetic Analysis Translational and Developmental and Annual Meeting of Society for Biotechnologists (India). 21st to 23rd, November, 2014.Organized by Department of Zoology, The University Of Burdwan.
4. **Bunker SK**, Dandapat J, Subudhi U, Jena S, and Chainy GBN “Promoter methylation is associated with the age dependent decrease of catalase expression in rat liver and kidney”. In: 17th Biennial conference of association of gerontology, India (AGI) and International conference on Engaging and Empowering the Elderely (ICEEE-2014). 15-16th September 2014. Organized by Center for development studies Thiruvananthapuram, Kerala, India.

5. **Bunker SK**, Chainy GBN and Dandapat J, “Comparative study of methylation pattern of catalase promoter in liver, kidney and cerebral cortex tissues of male rats during aging.” In: National symposium on Emerging trends in Biotechnology: Present scenario and future dimensions. 29th - 30th, March 2014. Organized by P.G. Department of Biotechnology, Utkal University, Bhubaneswar, Odisha.
6. **Bunker SK**, Subudhi U, Dandapat J, and GBN Chainy, “DNA methylation pattern of rat liver catalase promoter is modified by aging and neonatal Hypothyroidism”. In: First International and Third National Conference on Biotechnology, Bioinformatics and Bioengineering. 28-29th June 2013. Organized by Society for Applied Biotechnology (India), Sri Venkateswara University, Tirupati, Andhra Pradesh India. Pp 46.
7. **Bunker SK**, Subudhi U, Dandapat J and Chainy GBN, “Aging Modulates methylation pattern of catalase promoter of rat liver” .In: National Conference on Emerging Trends and Challenges in Basic and Translational Research in Biochemistry. February 4-5th February, 2013. Organized by Under the auspices of Centre of Advanced Study, Department of Zoology, Banaras Hindu University, Varanasi UP India.
8. K Sinha, **Bunker SK**, Sen P, Dandapat J and Mohanty N. “Effect of Mercuric acetate on silk worm (*Antherra Mylitta*) DNA”: An in vitro study. In: 13th Orissa Bigyan Congress, 9-11th December, 2010. In: Organized by Indian Science Congress Association, Bhubaneswar chapter. Biological Science Section. Pp 63.
9. **Bunker SK**, Paital B, Samanta L and Chainy G.B.N. “Purification and characterization of a thermostable superoxide dismutase from Mud Crab *Scylla Serrata*”.In: International symposium on Emerging Trends in Biomedical and Nanobiotechnology: Relevance to Human Health”.19-21thDecember, 2009. Organized

by All India Association of Biotechnology and Pharmacy at Acharya Nagarjuna University, Guntur, Andhra Pradesh, India. Pp127.

10. **Bunker SK**, Paital B, Samanta L and Chainy G. B. N. “Purification of a thermostable superoxide dismutase from Mud Crab *Scylla serrata*”. In: 12th Orissa Bigyan Congress. December 5-6th December, 2009. Organized by Indian Science Congress Association, Bhubaneswar chapter. Biological Science Section. Pp 133.

REFERENCES

1. **Prof. G. B. N. Chainy, Ph.D., FANSc,**
Visiting DBT Research Prof. NEHU Shillong
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DECLARATION:

I hereby declare that all the information furnished by me is true to the best of my knowledge and belief.

Suresh Kumar Bunker