



School of studies in Life Sciences

Department of Zoology

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Dr. Seema Rai
Professor
(Dean, SoSLS)

Qualifications:

Ph. D (Zoology)	2004, BHU, Varanasi
M. Sc. (Zoology)	1994, BHU, Varanasi
B. Sc. Zoology (Hon's)	1992, Patna University, Patna

Area of Interest/Specialization:

Molecular Reproductive and Metabolic Endocrinology, Endocrine Disruption, Clock Gene Regulation

Neuroendocrine regulation of Immunologic, Reproductive and Metabolic Disorder (Metabolic and Reproductive Health Management by melatonin, Correlation with melatonin receptor (MT1/ MT2) with the PCOS associated genes, their proteomic and genomic with reference to clock genes. Since 12 years I am engaged with the research work in the field of Molecular Neuroendocrinology with respect to therapeutic potential of melatonin, and herbal bioactive compounds in modulation of stress induced immunologic, reproductive (PCOS) and metabolic (Diabetes/ hypo and hyperthyroidism).

Experience:

Professor: Department of Zoology, GGV, Bilaspur, CG (03.01.2018- continue)

Associate Professor: Department of Zoology, GGV, Bilaspur, CG (17.06.2013 -02.01.2018)

Assistant Professor: Department of Zoology, GGV, Bilaspur, CG (08/08.2009- 16.06.2013)

INSA VISITING SCIENTIST 2012 Under Bilateral Programme: Department of Vertebrate Physiology, University of Warsaw, Poland

Pool Scientist (CSIR, New Delhi): Department of Zoology, BHU, Varanasi (22.04.2009-07.08.2009)

Young Scientist (DST Fast-Track): DST, New Delhi, Department of Zoology, BHU.
22.08.2005- 20.04.2009

Post-Doctoral Fellow: Department of Clinical & Experimental Pharmacology, University of Insubria, Varese Italy (May2007-Novemver 2007)

Awards and Honors:

S. No	Name Of Award	Awarding Agency	Year
1.	Dr. Mrs. Jagadiswari Rao Women Scientist Award-2021	Applied Zoologist Research Association (Azra 2020-2021)	2021
2.	Best Paper Award	Iqac, Guru Ghasidas Vishwavidyalaya, Bilaspur	2021
3.	Fellowship Award2020,	Bioved, Briats Allahabad, Up	2020
4.	Bharat Ratna Dr.RadhakrishananGold Medal Award	Global Economic Progress & Research Aassociation (Gepra) New Delhi	2018
5.	S.L Mishra Medal	Bioved, Briats Allahabad, Up	2018
6.	Insa Visiting Scientist 2012 (Bilateral Exchange Programme)	Insa, New Delhi	2012
7.	Pool Officer	Council Of Scientifi& Industrial Research (Csir), New Delhi	2009
8.	Researchscientist(Invitation Fellowship)	Deptt Of Clinical & Experimental Pharmacology, Univ Of Insubria, Varese Italy	2007
9.	Dst-Serc Fast TrackYoung Scientist	Department Of Science And Technology	2005
10.	Iiird Prize For Oral Presentation In 3 rd International Ipsg,	Ivri, Bereilly, Izatnagar	2002.
11.	Nj Chinoy Award ForBest Oral Presentation	27 th International Conference, Reprod Biol Comp Endocrinol, (Srbce) Hyderabad.	2009
12.	Best PresentationAward	Ix Congress Of European Biological Rhythm Society, Strasbourge, France	2009

Research Projects:

S.No	Title of Project	Funding Agency	Amount	Sanction Letter no with date	Duration of Project	Status of Project Completed/ ongoing
1.	“Neuroendocrine modulation of lymphocyte function in albino rat <i>Rattus norvegicus</i> : Role of endogenous melatonin and catecholamine”	UGC, New Delhi	10,30,40 0/-Lac	F. No. 41-94/2012 (SR) dated 13. July 2012	3 years	Completed
2.	Melatonin receptor (mt1/mt2) expression following steroid (adrenal/gonadal) induced toxicity in lymphocytes (blood & spleen).	(UGC BSR Research Start up Grant)	6,00,000 /- Lac	No. F. 20-1/2012 (BSR)/ 20-3 (3)/2012 (BSR)	1 ½ years	Completed
3.	DBT- under Boost to University Interdisciplinary Life science (Biotechnology, Botany and Zoology) Departments for Education and Research BUILDER (Action of melatonin on ovarian free radical load and cytokine(s) secretion in normal as well as experimentally induced anovulatory condition in rat: An <i>in vivo</i> and <i>in vitro</i> study).	DBT, New Delhi (In collaboration with Biotechnology and Botany Department)	~3.6 Cr.	Email dated	Five years	Completed

Research Publications

S. No	Authors	Title	Name of Journal	Volume	Page	Year
	Younis Ahmad Hajam, Rajesh Kumar , Indu Kumari , Gurpreet Kaur1 and Seema Rai	Epidemics and diagnostic testing by NS1 and MAC ELISA for identification of dengue suspected cases in district Hoshiarpur, Punjab, India	<i>International Journal of Entomology Research</i>	7 (11)	13-16	2022
	Rai Seema , Banjare Premlata, Naik Renu, Purohit Adyasha, Patel Sunita, Xaxa Kshipra and Roy Gunja	Melatonin Alleviates Constant Light Induced Oxidative Stress Damages of Kidney and Spleen of Female Rat	<i>International Journal of Zoological Investigations</i>	8 (2)	576-586	2022

	Rai S, Patel S and Gahir S	Impact of SARS-CoV-2 on Sleep / Wake Cycle and Melatonin DOI: 10.23880/cclsj-16000174	<i>Cell & Cellular Life Sciences Journal</i>	7 (2)	16000174	2022
1	Hindole Ghosh, Seema Rai , Md Dilshad Manzar, Seithikurippu R. Pandi-Perumal, Gregory M. Brown, Russel J. Reiter, Daniel P. Cardinali	Differential expression and interaction of melatonin and thyroid hormone receptors with estrogen receptor α improve ovarian functions in letrozole-induced rat polycystic ovary syndrome	<i>Life Sciences</i> IF-6.78	295	120086	2022
2.	Preeti Sharma, Younis Ahmad Hajam , Rajesh Kumar, Seema Rai .	Complementary and Alternative Medicine for the Treatment of Diabetes and associated Complications: A Review on Therapeutic Role of Polyphenols.	<i>Phytomedicine plus</i>	2	100188	2022
3.	Amnon Brzezinski, Seema Rai , Adyasha Purohit and Seithikurippu R. Pandi-Perumal.	Melatonin, Clock genes, and Mammalian reproduction: What is the link?	<i>International Journal of Molecular Sciences(Int. J Mol. Sci.)</i> IF-6.2	22,	13240.	2021
4.	Raksha Rani, Younis Ahmad Hajam, Rajesh Kumar, Rauf Ahmad Bhat, Seema Rai	A land scape analysis of the potential role of polyphenols for the treatment of Polycystic Ovarian Syndrome (PCOS).	<i>Phytomedicine Plus</i>	2	100161	2021
5.	Younis Ahmad Hajam, Seema Rai , Seithikurippu R. Pandi-Perumal, Gregory M. Brown, Russel J. Reiter, Daniel P. Cardinali.	Co-administration of melatonin and insulin improves diabetic-induced impairment of rat kidney function	<i>Neuroendocrinology</i> IF-3.39	DOI: 10.1159/000520280		2021
6.	Seema Rai , Shonali Chhatar, Shubhada Kalvit Pravin Kalvit	A clinical Report on association of hypothyroidism and hyperprolactinemia with female fertility.	<i>Acta Scientific Cancer Biology</i> IF-1.183	5	8	2021

7.	<u>Seema Rai</u> , Suman Rathore	Antiviral impact of melatonin with reference to influenza virus and Covid-19 infection.	<i>Acta Scientific Cancer Biology</i> IF-1.183	5	8	2021
8	Rani Raksha, Kumar Rajesh, Sharma Ptiti Hajam Younis Ahmad and <u>Rai Seema</u>	Phytochemical screening and free radical scavenging activity of <i>Cinnamomum tamalata</i> leaf extract.	<i>Intern J. Zool. Invest</i>	2	376-386	2021
9.	<u>Rai Seema</u> , Purohit Adyasha, Hajam Younis A., Ghosh Hindole, Basheer Muddasir and Kumar Yogesh	Melatonin and alcoholic seed extract of <i>Tephrosia purpurea</i> (Linn.) reverses polycystic ovarian syndrome (PCOS) induced hematological immune suppression.	<i>Intern. J. Zool. Invest.</i>	7	98-109,	2021
10	Swastika Purohit, <u>Seema Rai</u> , Shubhada Kalvit	Prevalence of polycystic ovarian syndrome and its association with circulatory gonadotropins (luteinizing hormone and follicle-stimulating hormone) and prolactin in different reproductive age groups: A brief survey.	<i>Journal of Reproductive Healthcare and Medicine</i> IF-0.125	2	8	2021
11.	Muddasir Basheer, <u>Seema Rai</u>	Exogenous melatonin revives the letrozole induced toxic variations in biochemical parameters in polycystic ovary syndrome in rats.	Uttar Pradesh Journal of Zoology	41	113-123	2021
12.	<u>Seema Rai</u> and Hindole Ghosh	Modulation of human ovarian function by melatonin	<i>Frontiers in Bioscience, Elite</i> IF-1.82	13	140-157.	2021
13	Rajesh Kumar, Hajam YA, Raksha Rani, <u>Seema Rai</u>	Pathogenesis of polycystic ovarian syndrome (PCOS): A Review.	<i>Journal of Applied Biology and Environmental System</i>	1	1-4	2020
14	Hajam YA, <u>Rai Seema</u>	Melatonin supplementation revives diabetic induced biochemical, histological and hematological impairments in rats.	<i>Heliyon</i> IF-2.85	25	e03770	2020

15.	Younis Ahmad Hajam, <u>Seema Rai</u> , Hindole Ghosh, Muddasir Basheer	Combined administration of exogenous melatonin and insulin ameliorates streptozotocin induced toxic alteration on hematological parameters in diabetic male Wistar rats.	<i>Journal of Toxicology Report</i> IF-4.81	7	353–359	2020
16.	Younis Ahmad Hajam, <u>Seema Rai</u>	Melatonin and insulin modulates the cellular biochemistry, histoarchitecture and receptor expression during hepatic injury in diabetic rats.	<i>Life Sciences</i> IF-6.78	239	117046	2019
17	D N Sharma and <u>S Rai</u> .	Antibacterial and antifungal activity of Cassia fistula and Bauhinia variegata: A comparative study and pharmacological importance	<i>International Research Journal of Pharmacy</i>	10	93-97	2019
18.	Younis Ahmad Hajam, <u>Seema Rai</u> , Muddasir Basheer, Hindole Ghosh and Srishti Singh	Protective role of melatonin in streptozotocin induced pancreatic damages in diabetic wistar rat.	<i>J. Biol. Sci</i>	21	423-431	2018
19.	Muddasir Basheer, <u>Seema Rai</u> , Hindole Ghosh, Younis Ahmad Hajam	Therapeutic efficacy of melatonin against poly cystic ovary syndrome (PCOS) induced by letrozole in Wistar rat.	<i>Journal of Biological Sciences.</i>	21	340-347	2018
20.	Muddasir Basheer, <u>Seema Rai</u> , Hindole Ghosh, Younis Ahmad Hajam.	The protective role of seed extract of <i>Tephrosia purpurea</i> in letrozole induced poly cystic ovary syndrome in Wistar rats.	<i>Journal of Biological Sciences</i>	18	458-467	2018
21.	Ghosh H, <u>Rai S</u> , Basheer M, Hajam YA	Receptor Cross Talk and Interplay between Melatonin and Ovarian Thyroid Axis in a letrozole induced poly cystic (Pco) Rat.	<i>J Clin and Cell Immunol</i>	9	1000552	2018
22.	Hindole Ghosh, <u>Seema Rai</u> , Younis Ahmad Hajam, Muddasir Basheer	Existence of Reciprocal Expression of melatonin Receptor MT1, MT2 on Thyroid and Ovary Modulates Metabolic and Reproductive Physiology via ER α , Dio2 and TR α Receptor cross talk during PCO rats.	<i>International Journal of Theoretical and Applied Sciences</i>	10	253-263	2018

23.	Y A Hajam, S Rai , H Ghosh, M Basheer, N Dewangan	Reversal in Thyroid Gland Impairments by exogenous melatonin in streptozotocin induced diabetic male rat.	<i>International Journal of Theoretical and Applied Sciences.</i>	10	61-67	2018
24.	M Basheer, S Rai , H Ghosh, Y A Hajam	Phytochemical estimation of <i>Tephrosia purpurea</i> seed extract	<i>International Journal of Theoretical and Applied</i>	10	51-53	2018
25	Adyasha Purohit, Seema Rai , Younis Ahmad Hajam	Hepatoprotective Role of Exogenous Melatonin and Insulin Plant (<i>Costus Igneous</i> Nak.) Extract against the Streptozotocin Induced Diabetes in Rats.	<i>Research & Reviews: A Journal of Drug Design & Discovery</i>	5	25-36	2018
26.	Gupta D, Rai S , Hajam YA	Neuroprotective Role of Exogenous Melatonin and Insulin Plant (<i>Costus igneus</i> Nak.) Extract on Brain in Streptozotocin-Induced Diabetes in Female Rat.	<i>Research & Reviews: A Journal of Pharmacognosy.</i>	1	33-41	2018
27.	Sadhana Singroul, Younis Ahmad Hajam, Seema Rai	Nephroprotective Effect of Exogenous Melatonin and Plant Extract of <i>Costus igneus</i> Nak.	<i>Research & Reviews: A Journal of Drug Formulation, Development and</i>	5	16-24	2018
28.	Y A Hajam, S Rai , S Shree, M Basheer, H Ghosh	Retrieval of reproductive complications by exogenous melatonin treatment in streptozotocin induced diabetic rat model.	<i>Research and Reviews, J Zool Sciences</i>	5	96-105	2017
29.	Y A Hajam, S Rai , A Roy, M Basheer, H Ghosh.	Repossession of Brain Complications in a Streptozotocin Induced Diabetic rat by Exogenous Melatonin Administration	<i>International Journal of Zoological Research</i>	13	64-73	2017
30.	S Rai , Y A Hajam, M Basheer, H Ghosh	Biochemical and histopathological inflections in hepato-renal tissues of streptozotocin (STZ) induced diabetic male rats: Impact of exogenous melatonin administration.	<i>J of Clinic Res and Bioethics</i>	7	100029 0	2016

31.	S Rai , H Ghosh, and M Basheer	Phytochemical Characterization and Antioxidative Property of <i>Ocimum canum</i> : Effect of Ethanolic Extract of Leaves and Seeds on Basic Immunologic and Metabolic Status of Male Rats.	<i>J Immunobiol</i> ,	1	1000108	2016
32..	M Basheer and S Rai	Melatonin vs. phytomelatonin: Therapeutic uses with special reference to poly cystic ovarian syndrome (PCOS)	<i>Cogent Biology</i>	2	1136257	2016
33.	S Rai , M Basheer, H Ghosh, D Acharya, Y A Hajam	Melatonin attenuates free radical load and reverses histologic architect and hormone profile alteration in female rat: An in vivo study	<i>Clin & Cellular Immunol.</i>	6	1000384	2015
34.	S Rai , C Haldar, D Acharaya, & M Basheer	Biological Significance of Reproductive Phase-Dependent Adjustment of Metabolic, Energetic and Immunologic Adaptations in a Male Seasonal Tropical Breeder <i>F. Pennanti</i> : Role of Melatonin and Thyroxin.	<i>Int. J. Multidisciplinary Approach and Studies</i>	2	148-164	2015
35.	S Rai , M Basheer, D Acharya, H Ghosh, P Bhattacharya Load.	Impairment of Ovarian and Uterine Cellular Architecture, Total Protein Content: A Consequence of Lead Nitrate Induced Increased Free Radical	<i>Adv of Biosciences & Bioengineering, Science PG</i>	3	49-55	2015
36.	E. Turkowska, S. Rai , P. Majewski, K. & Skwarlo-Sonta	Melatonin impact into the diurnal and seasonal changes in IL-6 and IL-18 gene expression in blood leukocytes of male <i>Gallus domesticus</i> with experimental peritonitis.	<i>Journal of Animal and Feed Sciences</i>	22.	79-87.	2013
37.	E. Turkowska, S. Rai , P. Majewski, K. Skwarlo-Sonta	Pineal oscillator functioning in the chicken- effect of photoperiod and melatonin	<i>Chronobiology International</i>	31	134-143	2014
38.	Rai S , Haldar C	Melatonin ameliorates oxidative stress and induces cellular proliferation of lymphoid tissues of a tropical rodent, <i>Funambulus pennanti</i> , during reproductively active phase.	<i>Protoplasma</i>	250	21-32	2013

39	Rai S. Haldar C, Singh R	Modulation of immunity in on immune function(s) of young adult and aged squirrel, <i>Funambulus pennanti</i> . by melatonin and p-chlorophenylalanin	<i>Immunity and Ageing</i>	6	5	2009
40.	Rai S. Haldar	Adaptive significance of annual variation in immune parameters and endogenous hormones (melatonin and thyroxine) of tropical rodent <i>Funambulus pennanti</i> .	<i>J Endocrinol. Res.</i>	2	111-116	2006
41.	Lahiri S, Rai, S. Haldar C.	Trade off relation between melatonin and gonadal steroid on melatonin receptor (Mel 1a R) expression on lymphoid tissue.	<i>J. Endocr. Res.</i>	1	62-65	2006
42.	Haldar C, Singh, S S, Rai S.	Melatonin and differential effect of L-thyroxine on immune system of Indian tropical bird, <i>Perdicula asiatica</i>	<i>Gen. Comp. Endocrinol.</i>	145	215-221.	2006
43.	Rai S. Haldar C, Singh S S	Trade-off between L-thyroxine and melatonin in immune regulation of Indian palm squirrel, <i>Funambulus pennanti</i> during the reproductively inactive phase.	<i>Neuroendocrinology.</i>	82	103-110	2005
44.	C Haldar, S Rai, R Singh	Melatonin blocks dexamethasone induced immunosuppression in a seasonally breeding rodent Indian palm squirrel, <i>Funambulus pennanti</i> .	<i>Steroids</i>	69	367-377	2004
45.	Rai S and Haldar C	Pineal Control of immune status and hematological changes in blood and bone marrow of male squirrels (<i>Funambulus pennanti</i>) during their reproductively inactive phase.	<i>Comp Biochem & Physiol.</i>	136,	319-328.	2003

Recent Books/Book Chapters/Monographs etc.

1. Raksha Rani, Pteeti Sharma, Rajesh Kumar, **Seema Rai**, Younis Ahmad Hajam (2021): Neurogenic Perspective of Poly cystic ovarian Syndrome: Protective Role of Exogenous

Biomolecule. In: *Frontiers in Science and Technology in India: An Overview*. Eds Rajesh Kumar, Ankush Sharma, Younis Ahmad Hajam. ISBN: 9783346354082 GRIN Publishing UK

2. Rajesh Kumar, Raksha Sharma, Sanjay Kumar Narang, **Seema Rai**, Younis Ahmad Hajam (2021): Hepatotoxicity: Its physiological pathways and control measure using natural phytochemicals and plant metabolites. In: *Phytomedicine: Treasure of Pharmacologically active Products from plants*. Eds: Rouf Ahmad Bhat Khalid Rehman Hakeem Moonisa Aslam Dervash, **ISBN: 9780128241097**; Publisher Elsevier Academic Press,
3. Younis Ahmad Hajam, **Seema Rai**, Rajesh Kumar, Javid Ahmad Malik (2019/ 2020): Phenolic compound from medicinal herbs: their role in animal health and diseases: A new approach for sustainable welfare and development. In: *Plant Phenolic- Volume 1 sustainable Agriculture* Eds by Rafiq Lone, Razia Shuab, Azra N Kamili, Zafar A Reshi. Publisher Springer Nature Singapore P Ltd; <https://doi.org/10.1007/978-981-15-4890>
4. Younis Ahmad Hajam, **Seema Rai** Nadini Jangde (2019): Exogenous melatonin reverses diabetic induced hyperphagia, polydipsia and biochemical alterations in gastrointestinal tract. *Proceedings of National Conference* 08-09 Nov 2019, ISBN 978-93-5391471-4; pp 107-115
5. Rakshita Sharma, Seema Rai, Hindole Ghosh, Muddasir Basheer and Younis A Hajam (2019) Melatonin and Tephrosia Seed Extract Therapy during PCOS: Ayurveda vs Allopath. 23rd Issue ISSRF News Letter 2019. PP 106-109.
6. Muddasir Basheer, OP Agrawal, Younis A. Hajam, Hindole Ghosh **Seema Rai** (2018): Vermicomposting: New approach to waste management and sustainable agriculture. in *Proceedings and Highlights of 20th Indian Agricultural Scientists & Farmers' Congress on "Recent Need Based and Eco-Friendly Technologies for Doubling Farmers 'Income'"* during 17-18 February 2018, organized under the auspices of BRIATS, Allahabad. Published by Bioved Research Society, PP 79-84.
7. **Seema Rai** (2018): Ayurveda: An alternate switch over to double the income of farmers. in *Proceedings and Highlights of 20th Indian Agricultural Scientists & Farmers' Congress on "Recent Need Based and Eco-Friendly Technologies for Doubling Farmers 'Income'"* during 17-18 February 2018, organized under the auspices of BRIATS, Allahabad,

Published by Bioved Research Society pp 92-99

8. C Haldar, S Gupta, **S Rai**, R Ahmad, R Yadav (2011): Pineal Gland and Circulatory Melatonin in Regulation of Immune Status of Seasonally Breeding Mammals in “*Eco-immunology*” eds Nelson and Demas Oxford Publisher link – uk catalogue.oup.com/product/9780199737345.do - United Kingdom –“Eco-Immunology” Edited by Gregory Demas and Edited by Randy Nelson Oxford Univ Pres USA; Chapter -9, pp 326-359.
9. C Haldar, Ahmad R, **Rai S**, S. Lahiri, S Sharma and S Gupta (2012): Seasonal and experimental day length in regulation of melatonin and immunity in Indian tropical mammal. In: Treatise on Photophysiology. Eds. Haldar C and Basu P, Chapter 9; pp 173-191. Imagination Publisher, India, ISBN -978-81-921414-1-1.

Research Supervision

Ph. D students enrolled: 04

Ph. D students guided and awarded: 03

Master’s Dissertations guided: 55

Administrative Responsibilities:

Hostel Warden - September 2009 – July 2013 20

Administrative Warden- August 2013 – November 2014

Head - Department of Zoology at Guru Ghasidas Vishwavidyalaya, Bilaspur Feb 2014 –Dec 2016

Dean- School of Studies of Life Science, Guru Ghasidas Vishwavidyalaya, Bilaspur 21st

Nov2022- continue.

Additional Information

1. **Convener** One day brain storming Symposium on NEP-2020 in Transformational Reforms of Curriculum Mapping, 17.12.2022
1. **Convener** of two-day National Symposium on Zoological Sciences: Recent Challenges and its application in Medical Research during 3-4 February, 2012
2. **Organizing Secretary** - Two days National workshop on Alternatives to use of Animals Sacrifice in Life Science Education for Teacher

3. **Organizing Secretary** - One day National Workshop with a theme Molecular update in Biological Sciences
4. **Nominated Member:** Executive Council, GGV, Bilaspur 2013-2015
5. **Member:** Academic Council 2014-2016
6. **Centre Superintendent** for session 2016 (June and December), Biotechnology Building, GGV, Bilaspur.

Updated on: 02.01.2023