Curriculum Vitae

Professor Mahendra Rai,
UGC-BSR-Faculty Fellow, Senior Professor
Department of Biotechnology
Sant Gadge Baba Amravati University
Amravati- 444 602, Maharashtra,
India
Email: mahendrarai@sgbau.ac.in

Education

Ph.D.	Fungal Biology	R D University, Jabalpur, M.P., India	NA	1982
M.Sc.	Plant Biology (Spl-Microbiol) (First rank in University)	R D University, Jabalpur, M.P.	69.6%	1978
B.Sc.	Biology	Dr H S Gaur University, Sagar, M.P.	72.0%	1976

Visits

- *SERC visiting fellow*, Jawaharlal Nehru University, New Delhi Oct. -Dec., 1996
Awarded by Department of Science and Technology, Government of India
- *INSA visiting fellow*, Jawaharlal Nehru University, New Delhi Jan.-March, 1998
Awarded by Indian National Science Academy, Government of India
- *Visiting scientist*, Dipartimento Di ColtureArboree, University of Turin,
Italy providedfinancial assistance April-June, 1999
- *Associateship from Third World Academy of Sciences* - UNESCO May-July, 2003
- *Visiting Scientist*, Department of Bioenergetics, University of Geneva, Switzerland,
May-June, 2004
- *Visiting Scientist*, Department of Plant Protection, Debrecen University, Hungary (October 2005-January 2006) and also in 2008, Scholarship awarded by Hungarian Scholarship Board, Hungary
- *Visiting Scientist,* Biological Chemistry Laboratory, State University of Campinas, Under Indo-Brazil collaborative Project sponsored by Department of Science and Technology, Government of India and CNPq, Brazil Government (Three visits :2009, 2011, 2012)
- *Visiting Professor*, Department of Microbiology, Nicolaus Copernicus University, Torun Poland (May 20-June 20, 2012)
- *Visiting Scientist*, Biological Chemistry Laboratory, State University of Campinas in January 13, 2013 to January 14, 2014
- *Visiting Scientist*, Nanotechnology Center, VSB Technical University Ostrava, Czech Republic (October 02 to November 02, 2015)

- *Visiting Scientist* Department of Pharmacognosy, University of Rosario, Argentina (November 25 to December 15, 2016)

Research Guidance

- Ph.D. Awarded –29
- M.Phil-03;M.Sc. Dissertations- 65

Managing positions

- Head of the Department of Biotechnology (2001- August 2017)
- Chairman, Board of studies in Biotechnology, SGB Amravati Univ (2001-2017)
- Chairman, Board of studies in Bio-diversity, SGB Amravati University 2006-2012
- Member, Research and Recognition Committee, SGB Amravati University since 2001
- Member, Purchase Committee, Amravati University (2003-2005)
- Member, Board of University Teaching and Research, SGB Amravati University
- Member/GovernerNominee, Selection Committee of different Universities
- Member, National Science Day Committee since 2001
- Co-ordinator, National Science Day Committee, 2006, 2015
- Principal investigator in Major projects
- Member XthPlanCommittee (UGC)
- Member, Academic Council, SGB Amravati University, 2005
- Member, Senate, SGB Amravati University, Amravati since 2006
- Co-ordinatorof "Biotech village programme: From lab to Field"
- Group Leader of Biotechnology ("Advantage Amravati"), Govt of India, 2005
- Course director of National level*Two-Week Training Course in Biotechnology,* sponsored by DBT, Govt of India, 2008.
- Co-ordinator, FIST (Funds For Infrastructure in Science and Technology), Department of Science and Technology, Govt of India
- Vice President, Society of Basic and Applied Mycology, Jabalpur (2009-2011)
- Organising secretary 2 seminars of national level in 1994 and 1998; Director of Workshop 1 (2001), In 2003 (2), 2004 (2), 2005 (1), 2007 (1), 2008-11
- Director, Internal Quality Assurance Cell, SGB Amravati University, Amravati 2009-2011
- Member, Academic Council of Jaypee University of Engineering and Technology, Guna, (M.P.)
- Co-ordinator, SAP (Special Assistance Programme), UGC., New Delhi since 2013
- Member Secretary, Institutional Biosafety Committee, SGB Amravati University, Amravati
- Chairman, Institutional Ethic Committee, Department of Biotechnology, SGB Amravati University, Amravati

Foreign Collaboration

- **Indo-Argentina**: Collaboration with DrSusanna Zaccino of Argentina in the field of Nanoantimicrobials (DST-MINCyT)
- **Indo-Swiss**: Collaboration with Professor Reto J. Strasser in the field of plant vitality in crop plants for sustainable development

- **Indo-Italian**: Collaboration with Professor Massimiliano in the field of nanotechnology.
- **Indo-German**: Collaboration with Dr Clements Posten, Karlsruhe Institute of Technology Germany in the field of nanotechnology
- **Indo-Brazil**: Collaboration with Professor Nelson Duran, Chemical Biology, Institute of Chemistry,University of Campinas, Brazil in the field of Nanotechnology
- **Indo-Poland**: Collaboration with Professor Hanna Dahm and Patricja Golinska, Nicolaus Copernicus University, Torun, Poland.
- **Indo-Czech Republic**: Collaboration with Professor Gabriela Kratosova, Nanotechnology Center, VSB Technical University of Ostrava, Czech Republic

Memberships of Scientific Societies

- Life-member Academy of Environmental Biology, Muzaffarnagar, U.P.
- Life member, Biotechnological Associations of India
- Life-member Indian Science Congress Association, Calcutta.
- Life-member Society of Mushroom Research, Himachal Pradesh.
- Life member Society of Basic and Applied Mycology
- In advisory board of "International Medicinal Mushroom Conference" in Slovania in 2007 and Croatia 2011
- In advisory board of International Conference on Medicinal Plants in 2006 at Cuba.
- Fellow of Academy of Environmental Biology
- Fellow of Society of Biotechnology and Pharmacy

Awards and Fellowships

- Obtained merit scholarship upto HSSC
- National Scholar for 5-years
- Obtained Junior, Senior and PDF, CSIR, New-Delhi
- Father T.A. Mathias award, 1989 by All India Association for Christian Higher Education, New Delhi.
- Satpuda Award in the field of Environment Conservation by Y.M.C.A., 1992.
- Fellow of Academy of Environmental Biology
- Elected Fellow of Maharashtra Academy of Sciences, 2016
- Awarded SERC visiting fellowship by DST, New Delhi, 1996
- Honorary research associateship for 1-year, Sydney, Australia, 1997
- INSA visiting fellowship, 1998
- Visiting scientist award (from April-June, 1999), Turin, Italy
- Medini Award for book on *Herbal Medicines*, by Govt of India, June 5, 2001
- Associateship for 3-years by TWAS, Trieste, Italy to work on AM fungi in Brazil, 2003
- Visiting Scientist, Department of Bioenergetics, University of Geneva, Switzerland, May-June, 2004
- Hungarian Scholarship by Hungarian Scholarship Board, to visit Department of Plant Protection, Debrecen University, Hungary (October 2005-January 2006).
- Awarded by IDVL for yeoman services in Microbiology 2005
- Awarded Austrian Scholarship for 2006 (Not availed)

- Hungarian Scholarship by Hungarian Scholarship Board, to visit Department of Plant Protection, Debrecen University, Hungary, 2008
- In advisory board of "International Medicinal Mushroom Conference" held in Croatia in 2011
- *Life Time Achievement Award* on March 22, 2018 at the hands of Smt Pratibha Patil, Honourable Former President of India

Research Publications

http://scholar.google.com/citations?user=8rykdvYAAAAJ&hl=en
http://www.amazon.com/Mahendra-Rai/e/B001JP7S5A

ResearcherID is: I-1076-2018

- **Scopus Author ID: 35494108800**
- **Orcid ID 0000-0003-0291-0422**
- **Featured in Stanford's list of top 2% scientists Under Nanoscience and nanotechnology (3rd)**
  https://www.thehindu.com/sci-tech/science/article33043379.ece/binary/IndiansWorldRanking.pdf

https://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.3000918

Research papers	- 400
h-index	- 65
Popular articles	- l02
Books	- 60
Patents	- 05

LIST OF PUBLICATIONS

Publications 2021

Shende S, Bhagat R, Raut R, Rai M, Gade A. (2021). Myco-fabrication of Copper nanoparticles and its effect on crop pathogenic fungi. IEEE Trans Nanobioscience. 2021 Feb 1;PP. doi: 10.1109/TNB.2021.3056100. Epub ahead of print. PMID: 33523815**(IF 2.290)**

Sahu, A.K., Sreepadmanabh, M., Rai, M., Ajit Chande (2021). SARS-CoV-2: phylogenetic origins, pathogenesis, modes of transmission, and the potential role of nanotechnology. *VirusDis.* **32:** 1–12,https://doi.org/10.1007/s13337-021-00653-y

Sousa HG, Uchôa VT, Cavalcanti SMG, Almeida PM, Chaves MH, Neto JSL, Nunes PHM, da Costa Júnior JS, **Rai M**, Carmo IS & EAde Sousa (2021) Phytochemical screening, phenolic and flavonoid contents, antioxidant and cytogenotoxicity activities of *Combretum leprosum* Mart. (Combretaceae), Journal of Toxicology and Environmental Health, Part A, DOI: 10.1080/15287394.2021.1875345**(IF 2.6).**

Rai M, Ingle AP, Ingle P, Gupta I, Mobin M, Bonifaz A, Alves M. (2021). Recent advances on mycotic keratitis caused by dematiaceous hyphomycetes. J Appl Microbiol. Jan 19. doi: 10.1111/jam.15008. Epub ahead of print. PMID: 33462841 **(IF-3.06)**

Rai M, Bonde S, Golinska P, Trzcińska-Wencel J, Gade A, Abd-Elsalam K, Shende S, Gaikwad S, Ingle A.(2021). *Fusarium* as a Novel Fungus for the Synthesis of Nanoparticles: Mechanism and Applications. *Journal of Fungi*. 7(2):139. https://doi.org/10.3390/jof7020139(**IF 4.6)**

Rai, M., Zimowska, B., Shinde, S. and Marcus V. Tres (2021).Bioherbicidal potential of different species of *Phoma*: opportunities and challenges. *Appl Microbiol Biotechnol* **105,** 3009–3018 https://doi.org/10.1007/s00253-021-11234-w**(IF-3.56)**

Leandro de França Ferreira É, Pereira de Carvalho Oliveira J, Silva de Araújo MR, **Rai M,** Chaves MH. (2021). Phytochemical Profile and Ethnopharmacological Applications of Lecythidaceae: An overview. J Ethnopharmacol. 22:114049. doi: 10.1016/j.jep.2021.114049. Epub ahead of print. PMID: 33766758**(IF 3.69)**.

Tatiana de Oliveira Lopes, Jaqueline Fernanda de Sousa Silva, Rudielson dos Santos Silva, Renata da Silva Carneiro, Antônio Rafael de Oliveira, Yáscara Lopes de Oliveira, Renato Pinto de Sousa, Clara Andrezza Crisóstomo Bezerra Costa, Iron Jonhson de Araújo Veras, Francisca Lucia de Lima, Ronaldo dos Santos Sousa Júnior, Johnnatan Duarte de Freitas, **Mahendra Rai,**Laécio Santos Cavalcante, Francisca Lucia de Lima, Mariana Helena Chaves, Chistiane Mendes Feitosa, Valdiléia Teixeira Uchôa (2021). Phytochemical, physicochemical, microbiological study and anticholinesterase activity of *Ginkgo biloba* L. and *Bacopa monnieri* L. used in phytotherapy, Research, Society and Development 10 (3), e39010313480, 2021**(IF 1.78)**

Wypij M, Jędrzejewski T, Trzcińska-Wencel J, Ostrowski M, **Rai M** and Golińska P (2021) Green Synthesized Silver Nanoparticles: Antibacterial and Anticancer Activities, Biocompatibility, and Analyses of Surface-Attached Proteins. *Front. Microbiol*. 12:632505. doi: 10.3389/fmicb.2021.632505**(IF-4.23).**

Rai, M.; Bonde, S.; Yadav, A.; Bhowmik, A.; Rathod, S.; Ingle, P.; Gade, A. (2021). Nanotechnology as a Shield Against COVID-19: Current Advancement and Limitations. *Viruses 13*, 1224. https://doi.org/10.3390/v13071224 **(IF-3.8)**

Chapters

Kashin V.V. et al. (2021) Macro-, Micro- and Nanosensors Based on Biological/Chemical Materials. In: **Rai M.**, Reshetilov A., Plekhanova Y., Ingle A.P. (eds) Macro, Micro, and Nano-Biosensors. Springer, Cham. https://doi.org/10.1007/978-3-030-55490-3_1

Tarasov S.E., Plekhanova Y.V., Rai M., Reshetilov A.N. (2021) Nano- and Microelectrochemical Biosensors for Determining Blood Glucose. In: Rai M., Reshetilov A., Plekhanova Y., Ingle A.P. (eds) Macro, Micro, and Nano-Biosensors. Springer, Cham. https://doi.org/10.1007/978-3-030-55490-3_15

Publications 2020

dos Santos, C.A., Ingle, A.P. &**Rai, M.** (2020). The emerging role of metallic nanoparticles in food. *ApplMicrobiolBiotechnol* (2020). https://doi.org/10.1007/s00253-020-10372**(IF 3.8)**

Rai M., Avinash P. Ingle, Raksha Pandit, Priti Paralikar, Netravati Anasane & Carolina Alves Dos Santos (2020) Curcumin and curcumin-loaded nanoparticles: antipathogenic and antiparasitic activities, *Expert Review of Anti-infective* Therapy, 18:4, 367-379, DOI: 10.1080/14787210.2020.1730815 **(IF-3.46)**

do Nascimento Cavalcante A, Lima LKF, Araujo CM, da Silva ´ Santos FP, do Nascimento MO, de Castro e Sousa JM, **Rai M,Feitosa CM** (2020). Toxicity, cytotoxicity, mutagenicity and in vitro antioxidant models of 2-oleyl-1,3-dipalmitoyl-glycerol isolated from the hexane extract of *Platonia insignis* MART seeds, *Toxicology Reports*, doi: https://doi.org/10.1016/j.toxrep.2020.01.014**(IF-2.63)**

Alavi M and Rai M. (2020). Topical delivery of growth factors and metal/metal oxide nanoparticles to infected wounds by polymeric nanoparticles: an overview. *Expert Rev Anti Infect Ther*. 2020;10.1080/14787210.2020.1782740. doi:10.1080/14787210.2020.1782740**(IF-3.46)**

Ingle, A.P., Shweta Wagh, Jayantakumar Biswas, Monojit Mondal, **Chistiane Mendes Feitosa and Mahendra Rai** (2020). Phyto-Fabrication of Different Nanoparticles and Evaluation of their Antibacterial and Anti-Biofilm Efficacy, *Current Nanoscience* 17: 1-14.https://doi.org/10.2174/1573413716666200313162736**(IF-1.58)**

Rai Mahendra, Shital Bonde , Alka Yadav , Yulia Plekhanova , Anatoly Reshetilov , Indarchand Gupta , Patrycja Golińska , Raksha Pandit & Avinash P. Ingle (2020): Nanotechnology-based promising strategies for the management of COVID-19: current development and constraints, *Expert Review of Anti-infective Therapy*, DOI: 10.1080/14787210.2021.1836961 **(IF-3.46)**

Magdalena Świecimska; Patrycja Golińska; Imen Nouioui; Magdalena Wypij; Mahendra Rai; Vartul Sangal; Michael Goodfellow (2020).*Streptomyces alkaliterrae* sp. nov., isolated from an alkaline soil, and emended descriptions of *Streptomyces alkaliphilus , Streptomyces calidiresistens* and *Streptomyces durbertensis*. *Systematic and Applied Microbiology*, 43 (6), 126153**(IF 3.283)**

Rafaella O. do Nascimento, Indarchand Gupta, Melika Parsapour,Avinash P. Ingleand Mahendra

Rai (2020).Nanotechnology for Combating Microbial Contamination of Water *Rev. Asoc. Col. Cienc. (Col.)*, 32: 42-62.

Rai, M., Gade, A., Zimowska, B., Ingle, A.P., Ingle, P. (2020). Harnessing the potential of novel bioactive compounds produced by endo- phytic *Phoma* spp. – biomedical and agricultural applications. *Acta Sci. Pol. Hortorum Cultus*, 19(6), 31–45. DOI: 10.24326/asphc.2020.6.3

Papers communicated

Feitosa C.M., Antônia Laires da Silva Santos, **Mahendra Rai,** Felipe Pereira da Silva Santos, Alyandra de Sousa Nascimento, Geovanna Trajano Oliveira da Silva, Alexandre Diógenes Pereira (2020)Chemical composition, repellent and larvicidal activity of essential oils against *Aedes aegypti*: A review, *Industrial Crops and Products***(Submitted)**

Feitosa, C.M., Maria das Dores A Oliveira, **Mahendra Rai,** Danielle C Silva; Joaquim S Costa Júnior (2020). Genotoxic and cytotoxic activities of hexane extract from *Platonia insignis* Mart. Seeds, *Toxicology and Applied Pharmacology* (communicated)

Bandeira R.M., Fernando P Lima, Maelson S Nunes, Evania Carvalho dos Santos C Santos, José R Santos Júnior, José M Matos, **Chistiane M Feitosa,** Shandesh Bhattarai, **Mahendra Rai** (2020). Revisiting the Green Plant-based Corrosion Inhibitors - a Sustainable Strategy for Corrosion Protection, *Arab. J. Chem* ***(Communicated)***

Uchôa, Valdiléia Teixeira, **Mahendra Rai,** Gilmânia Francisca Sousa Carvalho, Herbert Gonzaga Sousa, Patrícia e Silva Alves, Renata da Silva Carneiro, Ariane Maria da Silva Santos Nascimento, Felipe Pereira da Silva Santos, Gabriel e Silva Sales (2020).Anti-Inflammatory Activity of Wild Medicinal Plants of Piauí State-Brazil, In: Ethnopharmacology of wild plants (Eds: Rai, M., S. Bhattarai and **C.M. Feitosa,** CRC /Taylor and Francis, USA

Cavalcanti,| Suzana Maria Galvão, Valdiléia Teixera Uchôa,|Mariana Helena Chaves, José de Sousa Lima Neto,|Paulo Humberto Moreira Nunes,|Pedro Marcos de Almeida,|Joaquim Soares da Costa Júnior,|**Mahendra Rai**, Iolanda Souza do Carmo,|Elcilene Alves de Sousa, | Herbert Gonzaga Sousa (2020). Evaluation of the biological activity of ethanol extract and fraction of stem bark and leaves of *Combretum leprosum* Mart., *Ann*. Acad. *Brasil*. Sc. **(communicated)**

Oliveira Júnior, E.A., Lima, L.K.F., Lustosa, M.C.G., **Feitosa, C.M., Rai, M**., Almeida, W.S., Andrade, N.C., De Souza, S. N., De Lima, S.G. (2020). Chemical composition and anticholinesterase evaluation of aerial part of *Crotalaria retusa*L, *An.Acad. Bras. Ciênc.***(Communicated).**

Book chapters

Rai, M., Yadav A. (2020). Role of Nanostructured Materialsin the Treatment of Superficial Yeast infections , In: Nanotechnology in Skin, Soft tissue and Bone infections (Ed:Mahendra Rai), Springer verlag, pp 285

Abd-Elsalam, KA andMahendra Rai (2020). An introduction to nanomycotoxicology, In: Nanomycotoxicology (Eds: Mahendra Rai and Kamel A. Abd-Elsalam), Elsevier publication, USA, pp 521

Jogee P. and Mahendra Rai (2020). Application of nanoparticles in inhibition of mycotoxin-producing fungi, , In: Nanomycotoxicology (Eds: Mahendra Rai and Kamel A. Abd-Elsalam), Elsevier publication, USA, pp 521

Ingle AP, Indarchand Gupta, PritiJogee and Mahendra Rai (2020) Role of nanotechnology in the detection of mycotoxins: a smart approach, In: Nanomycotoxicology (Eds: Mahendra Rai and Kamel A. Abd-Elsalam), Elsevier publication, USA, pp 521

Santos,CA dos, **Mahendra Rai**, J.M. de Oliveira Jr, F.S. Del Fiol, R.A. Profeta, D Baldo, M.V. Chaud (2020). Curcumin and related antioxidants: applications to tissue pathology, In: Pathology (Ed. Victor R. Preedy), Academic press, ISBN 9780128159729, https://doi.org/10.1016/B978-0-12-815972-9.00019-6, pp 197-204

Gupta I., A. Yadav, A. P. Ingle, S.S. da Silva, **C.M. Feitosa, M. Rai** (2020). Microbially synthesized nanoparticles: Exposure sources and Ecotoxicity, In: Microbial Nanotechnolgy (Eds: Mahendra Rai and Paterycja Golinska), CRC/Taylor and Francis, USA, pp 308

Feitosa C.M., Antônia Laires da Silva Santos, Alyandra de Sousa Nascimento Veruska Cavalcanti Barros, Valeria Lima Silva, **Mahendra Rai** (2020). Annonaceae species a perspective for developing phytomedicines for Alzheimer's disease, In: Phytomedicine and Alzheimer's Disease (Eds: A. Bhattacharjee, R. Akula & O. Magisetty), Taylor and Francis/CRC USA, pp 348

Book chapters (in Portuguese)

Feitosa C.M., Karicia Lima de Freitas Bonfim, Ronaldo dos Santos Sousa Junior, **Mahendra Rai** (2019). Envelhecimento populacional e a Doença de Alzheimer, In: Acompanhamento farmacoterapêutico, suas implicações na Terapia da doença de Alzheimer (Eds:Chistiane Mendes Feitosa Karícia Lima De Freitas Bonfim), Atena Editora, 2020.

Feitosa C.M., Antonio do Nascimento Cavalcante, Cristiany Marinho Araújo, Ronaldo dos Santos Sousa Junior, **Mahendra Rai** (2019). Tratamento da Doença de Alzheimer e novos avanços terapêuticos, In: Acompanhamento farmacoterapêutico, suas implicações naTerapia da doença de Alzheimer (Eds:Chistiane Mendes FeitosaKarícia Lima De Freitas Bonfim), Atena Editora, 2020.

Feitosa C.M., Antônio do Nascimento, Layane Karine Farias Lima, **Mahendra Rai** (2019). Plantas medicinais perspectivas e usos no tratamento da Doença de Alzheimer, In: Acompanhamento farmacoterapêutico, suas implicações naTerapia da doença de Alzheimer (Eds:Chistiane Mendes FeitosaKarícia Lima De Freitas Bonfim), Atena Editora, 2020

Books Published

Wild Plants: The Treasure of Natural Healers" (Eds: **Mahendra Rai,** Shandesh Bhattarai and **Chistiane Mendes Feitosa**), CRC / Taylor and Francis, USA, pp 460.

Ethnopharmacology of Wild Plants, (Eds: **Mahendra Rai,** Shandesh Bhattarai and **Chistiane Mendes Feitosa**), CRC / Taylor and Francis, USA, pp 418.

Microbial Nanotechnology (Eds: **Mahendra Rai and Patrycja Golinska),** CRC / Taylor and Francis, USA pp 398.

Publication 2019

Kratošová G, Holišová V, Konvičková Z, Ingle AP, Gaikwad S, Škrlová K, Prokop A, **Rai M,** Plachá D. (2018). From biotechnology principles to functional and low-cost metallic bionanocatalysts.*Biotechnol Adv.* 37:154-176, doi: 10.1016/j.biotechadv.2018.11.012 **(IF-12.83)**

Banerjee A, Biswas JK, Pant D, Sarkar B, Chaudhuri P, **Rai M,** Meers E. (2019). Enteric bacteria from the earthworm (Metaphire posthuma) promote plant growth and remediate toxic trace elements,*J Environ Manage*, 250:109530. doi: 10.1016/j.jenvman.2019.109530 **(IF-4.96)**

Mondal M, Biswas JK, Tsang YF, Sarkar B, Sarkar D, **Rai M,** Sarkar SK, Hooda PS. (2019). A wastewater bacterium Bacillus sp. KUJM2 acts as an agent for remediation of potentially toxic elements and promoter of plant (Lens culinaris) growth, Chemosphere.232:439-452. doi: 10.1016/j.chemosphere.2019.05.156 **(IF-4.427)**.

Sousa Carvalho GF, Marques LK, Sousa HG, Silva LR, Leão Ferreira DC, Pires de Moura do Amaral F, Martins Maia Filho AL, Figueredo-Silva J, Alves WDS, Oliveira MDDA, Soares da Costa Júnior J, Cardoso Costa Junior FL, Ramos RM, **Rai M,** Uchôa VT (2019).Phytochemical study, molecular docking, genotoxicity and therapeutic efficacy of the aqueous extract of the stem bark of *Ximenia Americana* L. in the treatment of experimental COPD in rats. *J Ethnopharmacol.*, doi: 10.1016 /j.jep.2019.112259 **(IF 3.67).**

Alavi M. &**Mahendra Rai** (2019) Recent advances in antibacterial applications of metal nanoparticles (MNPs) and metal nanocomposites (MNCs) against multidrug-resistant (MDR) bacteria, Expert Review of Anti-infective Therapy, 17:6, 419-428, DOI: 10.1080/14787210.2019.1614914 **(IF-3.09)**

Alavi M and Rai M. (2019). Recent progress in nanoformulations of silver nanoparticles with cellulose, chitosan, and alginic acid biopolymers for antibacterial applications. Appl Microbiol Biotechnol. 103(21-22):8669-8676. doi: 10.1007/s00253-019-10126-4 **(IF-3.670)**

Rai, Mahendra, Alex Grupenmacher, Avinash P. Ingle, PritiParalikar, Indarchand Gupta, Monica Alves (2019). Evolving Nanotechnological trends in the management of mycotic keratitis, IET Nanobiotechnol, DOI: 10.1049/iet-nbt.2018.5416**(IF 2.059)**

Gaikwad S., Avinash P. Ingle, Silvio Silverio da Silva andMahendraRai (2019). Immobilized Nanoparticles-Mediated Enzymatic Hydrolysis of Cellulose for Clean Sugar Production: A Novel Approach, *Current Nanoscience* 15:296-303 **(IF-1.03).**

Patrícia e Silva Alves, Maria das Dores Alves de Oliveira, Pedro Marcos de Almeida, Francielle Aline Martins, Ana Am_elia de Carvalho Melo Cavalcante, Teresinha de Jesus Aguiar dos Santos Andrade, **Chistiane Mendes Feitosa,MahendraRai**, Antonielly Campinho dos Reis, Joaquim Soares da Costa Júnior (2019). Determination by chromatography and cytotoxic and oxidative effects of pyriproxyfen and pyridalyl, *Chemosphere* 224:398-406 **(IF-4.427)**

Paralikar P., Avinash P. Ingle, Vaibhav Tiwari, Patrycja Golinska, Hanna Dahm, and **Mahendra Rai**. Evaluation of antibacterial efficacy of sulfur nanoparticles alone and in combination with antibiotics against multidrug-resistant uropathogenic bacteria *Journal of Environmental Science and Health, Part A*. (accepted, **IF-1.56).**

Jahagirdar, A.S., **Shende, S.**, Gade, A., Rai, M. (2019). Bioinspired synthesis of Copper Nanoparticles and its efficacy on Seed Viability and Seedling Growth in Mungbean (*Vigna radiata* L.). *Current Nanoscience* (Article in press). (**Impact Factor 1.30**)

Ingle A.P., Philippini R.R., Rai M. and Silvio Silvério da Silva (2019). Catalytic hydrolysis of cellobiose using different acid-functionalized Fe3O4 magnetic nanoparticles IET Nanobiotechnology, DOI: 10.1049/iet-nbt.2019.0181 , Print ISSN 1751-8741, Online ISSN 1751-875X

Antunes FAF, Chandel AK, Terán-Hilares R, Ingle AP, Rai M, Dos Santos Milessi TS, da Silva SS, Dos Santos JC. (2019).. Overcoming challenges in lignocellulosic biomass pretreatment for second-generation (2G) sugar production: emerging role of nano, biotechnological and promising approaches. *3 Biotech* **9,** 230. https://doi.org/10.1007/s13205-019-1761-1

Ingle, AP, Philippini RR, Rai M, Silvio Silvério da Silva (2019). Catalytic hydrolysis of cellobiose using different acid-functionalised Fe_3O_4 magnetic nanoparticles. *IET Nanobiotechnol*. 2020;14(1):40-46. doi:10.1049/iet-nbt.2019.0181**(IF-2.059)**

Bansod SD, Bawaskar M, Shende S, Gade A, Rai M. (2019). Novel nanoplex-mediated plant transformation approach. IET Nanobiotechnol. 13(6):609-616. doi: 10.1049/iet-nbt.2018.5283 **(IF-2.059)**

Biswas, J.K.; Banerjee, A.; Sarkar, B.; Sarkar, D.; Sarkar, S.K.; Rai, M.; Vithanage, M. (2020). Exploration of an Extracellular Polymeric Substance from Earthworm Gut Bacterium (*Bacillus*

licheniformis) for Bioflocculation and Heavy Metal Removal Potential. *Appl. Sci. 10 (1)*: 349, https://doi.org/10.3390/app10010349 **(IF 2.28)**

Book Chapters:

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BOOKS PUBLISHED

1) Herbal Medicines Biodiversity, and Conservation Strategies, International Book Distributors, Dehra Dun, U.P., India, 1996
2) The genus *Phoma*: Identity and Taxonomy, International Book Distributors, Dehra Dun, U.P., India, 1998.
3) AdvutJadibootiyan (Herbal Medicines) Bishen Singh, Mahendra Pal Singh, Dehra Dun, U.P., India, Awarded **Medini**Award *by Department of Environment, Govt of India),* 2001
4) Integrated Management of Plant Resources, Scientific Publisher, Jodhpur, Rajasthan, India, 2000

5) Plant Derived Antimycotics: Currrent trends and future prospects, Haworth Press, USA, 2003.
6) Recent Trends in Biotechnology, Scientific Publisher, Rajasthan, 2003.
7) Bio-Diversity of Fungi - Their Role in Human Life, Science Publisher, USA, 2003
8) Fungi: Diversity & Biotechnology, Scientific Publisher, Rajasthan, 2005.
9) Handbook of Microbial Biofertilizer Haworth Press, USA, 2005.
10) Naturally occurring bioactive compounds: a new and safe alternative for control of pests and microbial diseases, Elsevier Publication, 2006.
11) Mycotechnology: The present status and future prospects, I K International, New Delhi, India, 2007.
12) Novel Therapeutic Agents from of Natural Origin: Progress and Future Perspectives, Science Publisher, USA, 2007.
13) Handbook of Techniques in Microbiology, Scientific Publisher, Jodhpur, 2008.
14) Current Advances in Molecular Mycology, Nova Science Publisher, New York, 2009.
15) Applied Mycology, CABI International, UK, 2009.
16) Advances in Fungal Biotechnology, I K International New Delhi, 2009
17) Mycotoxinin Food, Feed and Bio-weapons, Springer, Germany, 2009.
18) Progress in Mycology, Scientific Publisher, Jodhpur, 2010.
19) Geomicrobiology, Science Publisher, CRC Press, USA, 2010.
20) Diversity and Biotechnology of Ectomycorrhizae, Springer, 2010
21) Ethnomedicinal Plants: Revitalizing of Traditional Knowledge of Herbs, Taylor and Francis, 2011
22) Metal nanoparticles in Microbiology, Springer, 2011
23) Natural antimicrobials for Food Safety and Quality, CABI International, UK, 2011
24) Nanoantimicrobials: Progress and Prospects, Springer, 2012
25) Medicinal plants: Biodiversity and Drugs, CRC/Tay;or and Francis, 2012
26) Statistics for Microbiologists: Methods and Applications, Himalaya Publishing House, Nagpur pp 210, 2013
27) Natural Antioxidants and Biocides from Wild Medicinal Plants,CABI, UK, 2013
28) Fighting multidrug resistance with herbal extracts,essential oils and their components, USA, pp 271, 2013
29) Fungal Enzymes, CRC press, USA, pp 464, 2013
30) Antifungal metabolites from plants, Springer, pp 469, 2013
31) Green Biosynthesis of Nanoparticles, CABI, England, 2014
32) Microbiology for Surgical Infections: Diagnosis, Prognosis and Treatment, Elsevier, 2014
33) Nanotechnology in Diagnosis, Treatment and Prophylaxis of Infectious Diseases. Elsevier, USA, 2015
34) Nanotechnologies in Food and Agriculture. Springer, 2015
35) Medical Mycology: Current Trends and Future Prospects, CRC Press, Taylor and Francis,USA,2015
36) Therapeutic Medicinal Plants: From Lab to the Market - CRC Press, Taylor and Francis,USA, 2016
37) Antibiotic resistance:Mechanisms and new antimicrobial approaches, Elsevier, 2016
38) The Microbiology of Respiratory systems infections, Elsevier, 2016
39) Nanotechnology for Bioenergy and Biofuel Production, Springer, 2017

40) Essential Oils and Nanotechnology for Treatment of Microbial Diseases, CRC Press, Taylor and Francis,USA, 2017
41) Metal Nanoparticles in Pharma, Springer, 2017
42) Nanotechnology Applied to Pharmaceutical Technology, Springer, 2017
43) The Microbiology of Skin, Soft Tissue, Bone and Joint infections, Elsevier, 2017
44) The Microbiology of Central Nervous system, Elsevier, 2018
45) Nanomaterials: Ecotoxicity, Safety, and Public Perception, Springer, 2018
46) Biomedical Applications of Metals, Springer, 2018
47) Ethnobotany: Application of Medicinal Plants, CRC/Taylor and Francis, USA, 2018
48) Ethnobotany:Local Knowledge and Traditions, CRC/Taylor and Francis, USA, 2019
49) Mycotic Keratitis, CRC/Taylor and Francis, USA, 2019
50) Sustainable Bioenergy, Elsevier, 2019
51) Nanomycotoxicology, Elsevier, 2019
52) Nanotheranostics: Applications and Limitations, Springer 2019
53) Nanobiotechnology in Neurodegenerative Diseases, Springer, 2019
54) Pythium: Diagnosis, Diseases, and Management, CRC/Taylor and Francis, 2020
55) Nanotechnology for Skin, soft tissue and bone infections, Springer, 2020
56) Nanoformulations in human health: Challenges and approaches Springer 2020
57) Microbial Nanotechnology, CRC Press, Taylor and Francis, USA, 2020
58) Nanobiotechnology in Diagnosis, Drug delivery and Treatment, Wiley, USA, 2020
59) Macro- Micro and Nanobiosensor, Springer 2020
60) Wild Plants: The treasure of Natural Healers, CRC/Taylor and Francis, USA, 2020
61) Ethnopharmacology of Wild Plants, CRC/Taylor and Francis, USA, 2021
62) Biopolymer-based Nano-Films: Applications in food packaging and wound healing, Elsevier, 2021

Participation in Important Conferences

- Participated in 5th International Conference in Goteborg, Sweden,June 26- 30, l995
- Participated in two day seminar on infectious diseases at Campinas, Brazil, 2003
- Participated in one day seminar on May 28, "40 years of Molecular Biology", University of Geneva, 2004.
- Delivered plenary lecture on "Biotechnological research in India: Where we are and where we should go? delivered in Plant Protection Symposium, Oct. 19-20, 2005, Debrecen, Hungary
- Invited to deliver keynote address in "International Conference on Biotechnology and Climate Change (July 23-24, 2010), Solo, Indonesia.
- Invited to deliver keynote address in "Ist Symposium on Mycotoxins in Nuts and Dry Fruits", organized by Islamic Azad University Damghan Branch (Iran), during 10-12 September, 2011.
- Delivered a talk in "6th International Medicinal Mushroom Conference" organized by Dr Myko San – Health fromMushrooms Co. Zagreb, Croatia during 25-29 September 2011.
- Delivered invited lecture in international conference on "Topical Infectious Diseases: The Clinic, The Diagnosis, Treatment" organized by The Main Military Medical Clinical Centre, Kiev, Ukraine during 23 to 24 November, 2011.

- Delivered lecture in 46th International Scientific Conference:Microbiology in the health care and environment protection, organized by the Scientific Assoc. of Bydgoszcz and Micro, Department of J.J. Sniadecki University of Technology & Life Sci in Bydgoszcz, Poland, 03-06 June, 2012
- Delivered invited talk in "Workshop on Nanobioss"- Green Nanobiotechnology: Biosynthesis and Nanoantimicrobials", 27 March, 2013, organized by institute of Chemistry, University of Campinas, SP, Brazil.
- Delivered two invited talks at Faculdade de Farmacia, USP, Ribeirao Preto on *Fruit preservation using Nanotechnology,* April 11, 2012 and visited Departimento de Biologia
- Delivered invited talk in Institute of Chemistry, Universidade Federal do Rio de Janeiro, Escola de Quimica, Departamento de Processosorganicos, Biogenic Synthesis of Metal nanoparticles and their application as nanoantimicrobials, 29 April, 2013.
- Delivered invited lecture in 27th Congress of Society of Brazilian Microbiologists, held at Natal from September 29 to October 03, 2013.
- Delivered invited lecture on 26 October 2013 at faculty of medicine at Ribeirao Preto, University of Sao Paulo, title- Microbiol systems in nanobiotechnology: mycosynthesis, mechanism and applications.
- Delivered invited lecture on 05 November, 2011 in SLACA (Symposio Latin Americano de Cientia de Alimentos) at University of Campinas, Campinas, title Emerging Green Nanobiotechnology for fruits Safety and Quality : Progress and Pitfalls, organized by Latin American Food Science Society from 03-06 November, 2013
- Delivered invited lecture in 27th congress organized by Brazilian Society of Microbiology, at Natal, Brazil,September 29-October 03, 2013.
- Delivered invited lecture in II SIAN Symposium, organized by Anatomy Department, Universidade Federal Uberlandia, Brazil, held at Uberlandia from November 21 - 23, 2013. Topic: General aspects of Nanobiotechnology: Progress and Applications.
- Delivered plenary lecture in 7th International Symposium on Plant protection, organized by Debrecen Agriculture University, Debrecen, Hungary on 21-22 October, 2015
- Delivered two invited lectures in "*Workshop on Bionanotechnology*", on 26 October,2015organized by Nanotechnology Center, VSB Technical University, Ostrava, Czech Republic.
- Delivered invited lectures in Federal University of Piaui, Brazil.
- Delivered invited lecture titled as "Noble nanosilver as a novel broad-spectrum antimicrobial agent"in LV National Congress and Sixth International Congress of Biological sciences (virtual), November 5-7, 2020, Colombian Association of Biological Sciences, Colombia.
- Delivered inaugural address titled as "Fungal Systematics: From Morphology to Molecular Biology and beyond" in Two Days National online wokshop on "Fungal Systematics and Technological Advances, Shri Shivaji College, Amravati and Mycological Society of India, Mumbai Unit. November 29-30, 2020.
- Delivered invited lecture "Nanomaterials for sustainable agriculture", Facultad de Ciencias Agrotecnológicas, Universidad Autónoma de Chihuahua, Escorza 900, Chihuahua, CP 31000, México, April 23, 2021.
- Delivered invited lecture "Biogenic silver nanoparticles: What we know and what we need to know? In 'Nano Ostrawa 2021', 7th Nanomaterials and Nanotechnology Meeting,

May 17-20, 2021, organised by Nanotechnology Center, VSB Technical University of Ostrawa, Czech Republic, Date of lecture 19 May, 2021.

SHORT COURSES ORGANIZED IN BRAZIL

- A short coursewasorganized in nanotechnologyfromJune 17-21, 2013 atUniversidade Federal de São Paulo - Campus Diadema, Departamento de Ciências Exatas e da Terra. Delivered series of lectures

- A short coursewasorganized in nanotechnology 0n 23 October , 2013 atUniversidade Federal de São Paulo – Sao Jose dos Campos S.P., Departamento de Ciências Exatas e da Terra. Delivered series of lectures

- A short course was organized in nanotechnology from November 11-14, 2013 at State University of Campinas, S.P., Brazil

- **Short Course on Nanotechlogy at School of Engineering at Lorena, University of Sao Paulo, Brazil, 2017**

REVIEWER OF INTERNATIONAL JOURNALS

- Bioprocess and Biosystems Engineering, Springer IF 1.83
- Journal of Plant Nutrition and Soil Science, Wiley IF 1.595
- Archives of Agronomy and Soil Science, UK, IF 1.532
- Persoonia, Netherland, IF 0.8
- Open Mycology Journal, Bentham Science Publishers, UK
- Nanomedicine (Future Sci group, UK), IF 5.44
- Bioresource Technology, IF 4.742
- Process Biochemistry, Elsevier IF 3.344
- Journal of Medicinal Plants Research, Africa IF 0.60
- Biological Diversity Journal, Indonesia, IF 2.00
- Expert Review of Medical Devices, UK, IF 1.725
- Brazilian Journal of Microbiology, Brazil, IF0.947
- International Journal of Integrative Biology
- Free Radical Research, Taylor and Francis, IF 2.22
- Natural Products Communications, USA, IF 0.745
- Current Nano-Science, Bentham science, IF 1.5
- Current Trends in Biotechnology and Pharmacy
- Journal of Nanoparticle Research, Springer, IF 3.25.
- Journal of Experimental Nanoscience, Taylor and Francis, IF 0.95
- International Journal of Antimicrobial Agents
- Journal of Applied Phycology, Springer, IF 1.79
- African Journal of Microbiology 0.553
- 3 Biotech, Springer
- Indian J of Biotechnology, IF0.38
- Journal of Cluster Science, Springer, IF 0.96

- Journal of Hazardous Materials, Elsevier, IF 3.997
- Journal of the Science for Food and Agriculture, Wiley publisher, IF 1.36
- Journal of Agricultural Biotechnology and Sustainable Development, Africa IF 0.68

ORGANIZATION OF CONFERENCES/WORKSHOPS/PROGRAMME

I was patron and Coordinator for the following activities:

1. Biotech beyond-2000 (Sept 6-7, 2002), sponsored by Alumni and research students of Department of Biotechnology (Patron)
2. One day workshop on medicinal plants: cultivation and conservation (2003) in association with Forestry Research and Human Resource Development Center, Chindwara.(MP) (Coordinator)
3. One day workshop for "Biotech from lab to field" organized at Wadgaon- Mahure in January, 2003 (Coordinator)
4. One Day Training on "*Preparation of Biopesticides"* held at WadgaonMahure, March 12, 2004 (Coordinator)
5. One Day Training on "*Biotechnology for Sustainable Development*" held at WadgaonMahure, March 26, 2004 (Coordinator)
6. Application of Biotechnology for Sustainable Development of Villages, Wadgaon, March 01, 2006,
7. Director, *National seminar on trends in Nanobiotechnology***,** held atDepartment of Biotechnology Sant Gadge Baba Amravati University, Amravatiheld on 2013,January4.
8. Director, Current Advances in Biotechnology and Annual Meeting of Society for Biotechnologist, November 25-26, 2013

PARTICIPATION IN SCIENTIFIC TEAMS, PROGRAMME AND SCIENTIFIC PROJECTS NATIONAL AND INTERNATIONAL

ONGOING PROJECTS: 01 **(Indo-Argentina Project)**

MAJOR PROJECTS COMPLETED: 13 (DST, UGC, MOEF, DBT, DRDO, RGSTC, Mumbai);Indo-Brazil Project Completed (01)
MINOR PROJECTS COMPLETED: 04(UGC, AIACHE)

MENTOR IN THE PROJECT/FELLOWSHIP: 02 (UGC, DST)

SCIENTIFIC BOARDS AND SOCIETIES

- Member of international advisory committee of International Medicinal Mushroom Conference, 2007
- Member of advisory committee of International conference organized by BLACPMA, scheduled to be held at Cuba, 2006
- Patron, National symposium on *Biotechnology Beyond 2000*. Sep 6-7
- Organising secretary 2 seminars of national level in 1994 and 1998 ; Director of Workshop 1 (2001), In 2003 (2), 2004 (2), 2005 (1), 2007 (1)

- Member of advisory committee of International conference organized by BLACPMA, held at Cuba, 2006
- Adviser of International Conference on Antimicrobial Research (ICAR2010), Valladolid (Spain), 3-5 November 2010

EDITOR-IN-CHIEF/EDITORIAL BOARD MEMBER

Editorial board member of Journal of Agriculture, Slovakia
Editorial board member of Frontiers in Food Microbiology
Editorial board member of The Scientific World Journal, Hidawi Publication
Editorial board member of Journal of Nanomaterials
Editorial board member of Current Nano Science Journal
Editor-In-Chief, *Amravati University Research Journal*, Amravati, India (upto 2009)
Editorial board member of *Journal of Basic and Applied Mycology*, Jabalpur, India.
Editorial board member of *BLACPMA*, Santiago, Chile.
Editorial board member of *Current Trends in Biotechnology and Pharmacy*, Guntur, India.
Biodiversita (Journal of Biodiversity), Indonesia
Editorial board member of Journal of Pharmaceutical Education &Research, India
Editorial board member of Journal of Nanobiotechnology,, Springer (BMC)
Associate Editor, IET Nanobiotechnology, UK
Guest Associate editor, Frontiers in Food Microbiology, 2014