

Dr. Vasudev R. Thakkar

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❖ **Aim: To keep learning and give my best to students**

Education:

Post-Doctoral studies	2009	M.S. University of Baroda, Gujarat, India
Ph. D. (Microbiology)	2003	Sardar Patel University, Gujarat, India
Masters in Science (Biochemistry)	1995	
Bachelor in Science (Biochemistry)	1993	
Diploma in Pharmacy	1990	

Research:

- ✓ Published 65 research papers, having 942 citations, h index 20 and i10 index 35.
- ✓ RG Score: 28.76
- ✓ Major research projects completed [UGC,CSIR,DBT]: 5
- ✓ Research Students Guided: 12
- ✓ Presently working research students: 02
- ✓ **Research Area:** Plant immune system,
Study of apoptosis inducing or otherwise useful plant/fungal secondary metabolites of importance.

Teaching:

Cell Biology, Cellular Metabolism, Human Physiology, Nutritional & Clinical Biochemistry, Animal Biotechnology, Enzymology, Biochemical Toxicology.

Accolades:

1. Dr. P. D. Sethi Best Research Paper Award (published in Current Microbiology) by ANCHROM Enterprises (I) P. Ltd. (2017)
2. DST Travel award for attending international conference on experimental biology 2015 at Boston, USA
3. Served as Judge of poster competition at international conference on experimental biology 2015 at Boston, USA
4. Hari Ohm Ashram Prerit Bhaikaka Smarak Trust Best Research Paper Award in section "Instrumentation" (published in Journal of Chromatographic Sciences) (2008)
5. Dr. D. S. Kothari Post Doctoral Fellowship by UGC (2008-09).
6. Invited, visited and presented seminars at University of Guelph, Toronto, Canada, A & M University, Texas, University of North Texas (UNT), USA.

7. Served as a mentor in Department of Science and Technology (DST) sponsored Inspire programme for undergraduate students (2014).
8. Attended young Indian scientist colloquium (YISC 2009) at Tata Institute of Fundamental Research (TIFR), Mumbai, India

✓ **Number of Seminars, Symposia organized:**

02

❖ **Number of Seminar/Winter School/ Symposium/ Workshop etc. attended: 31**

✓ **Membership of professional bodies, editorship of journals, etc**

1. Life member of Society of Biological Chemists (India) (SBC).
2. Life member of Association of Microbiologists of India (AMI), Microbiologist's Society of India (MSI) & Gujarat Biosciences Society (GBS).
3. Editorial Board member, African Journal of Biochemistry, J of Bio chemistry (<http://www.academicjournals.org/ajbr/Editors.htm>)
4. Member American Society of Biochemistry and Molecular Biology (ASBMB) 2015

Research work in brief :

1) Plant Disease Resistance:

Plants have a natural defense system, which can be activated to control loss of yield due to infection by pathogens. We work to get the plants disease free either by SAR or ISR mechanisms. Late blight, caused by *Phytophthora infestans*, is one of the significant diseases of potato plants that reduce more than 25% of yield of potato every year in India. *P. infestans* produces highly conserved 10 KDa proteins called 'elicitins' (Avr gene product) which may be identified by plants (by its R gene product). We have purified a specific elicitor, called 'infestin' and standardized mounting of natural resistance in potato plants against this deadly pathogen (Induction of systemic resistance in different varieties of *Solanum tuberosum* by pure and crude elicitor treatment **Indian Journal of Experimental Biology** **2011, 49 (2), 151**). We are also working on *A. hypogaea* L. plants to control the collar rot disease in it. Bacteria were isolated from rhizosphere soil of groundnut plants grown in different region of Gujarat, India. The plant growth promoting and antagonistic activity (against *A. niger*) of these bacteria were compared and selected bacteria having highest level of siderophore, GA3, IAA, phosphate and ammonia producing ability were studied for their efficacy of inducing ISR in plants.

One of the PGPR bacterium we have isolated is a novel strain of *Pseudomonas guariconensis*. It is capable of controlling collar rot disease in *A. hypogaea* L. plants in green house as well as field conditions (A *Pseudomonas guariconensis* strain capable of promoting growth and controlling collar rot disease in *Arachis hypogaea* L. **Plant and Soil**, **2015**, **390**(1-2), **369-381**; Induction of pre-chorismate, jasmonate and salicylate pathways by *Burkholderia* sp. RR18 in peanut seedlings. **J Appl Microbiol**. **2021**).

2) Secondary metabolites/Neutraceuticals from plants/ fungi

➤ Jasmonic acid biosynthesis in *Lasiodiplodia theobromae*.

As Jasmonic Acid (JA) is of importance in food and perfumery industries and it is expensive to extract it from *Jasminium grandiflorum* flowers, fermentation studies on *L. theobromae* for production of JA are carried out. A biochemical study on the pathway producing JA is very well studied in plants [Vick and Zimmerman, 1983, 1984], but not in fungi. We obtained *L. theobromae* (MTCC 3068) in our lab and developed its mutant strain, which is producing almost twice the amount of JA than the wild type fungus. We have also done fermentation studies on JA production. Presently we are studying biochemistry of JA pathway (Purification, Characterization and Application of Lipoxygenase Isoenzymes from *Lasiodiplodia theobromae* Applied biochemistry and biotechnology, 2014, 1-13).

➤ Effect of curcumin, jasmonic acid and other secondary metabolites on biology of *S.pombe* cells.

We have found that curcumin has a concentration based effect on cells. It also causes cell cycle arrest. (Cell proliferation and DNA damage study by SCGE in fission yeast exposed to curcumin and flurouracil Asian Journal of Cell Biology 2013, 8 (1) 22-32). We are also studying on isolation of novel bioactive secondary metabolites. We are also studying effect of citral, L-carvone on apoptosis (L-carvone induces p53, caspase 3 mediated apoptosis and inhibits the migration of breast cancer cell lines. Nutrition and cancer, 66 (3), 453-462).

LinkedIn & Google scholar:

[linkedin.com/in/vasudev-thakkar-31630a15](https://www.linkedin.com/in/vasudev-thakkar-31630a15)

<https://scholar.google.com/citations?user=bE2HFbEAAAAJ&hl=en>

Research Publications : (Last six years)

1. Bharat H Pursuwani, Bhupesh S Bhatt, Dilip B Raval, Vasudev R Thakkar, Jyoti Sharma, Chandramani Pathak, Mohan N Patel Synthesis, characterization, and biological applications of pyrazole moiety bearing osmium (IV) complexes. **Nucleosides, Nucleotides & Nucleic Acids. 2021** June 21. 40(6) 593-618.
2. Patel RR, Patel DD, Bhatt J, Thakor P, Triplett LR, Thakkar VR. Induction of pre-chorismate, jasmonate and salicylate pathways by *Burkholderia* sp. RR18 in peanut seedlings. **J Appl Microbiol. 2021** Jan 31. doi: 10.1111/jam.15019. PMID: 33522007.
3. Kanthecha DN, Bhatt BS, Patel MN, Raval DB, Thakkar VR, Vaidya FU, Pathak C. Bipyrzole Based Novel Bimetallic μ -oxo Bridged Au (III) Complexes as Potent DNA Interacalative, Genotoxic, Anticancer, Antibacterial and Cytotoxic Agents. **Journal of Inorganic and Organometallic Polymers and Materials. 2020** Dec; 30 (12):5085-99.
4. Thakor PA, Subramanian RB, Thakkar SS, Thakkar VR. Cytotoxic, apoptosis inducing effects and anti-cancerous drug candidature of jasmonates. **Drug development for cancer and diabetes. 2020** Aug 30:117-27.
5. Dhameliya HA, Thakkar VR, Trivedi GN, Mesara SN, Subramanian RB. Pentoxifylline: An Immunomodulatory Drug for the Treatment of COVID-19. **J Pure Appl Microbiol. 2020**; 14:861-7.
6. Kanthecha DN, Raval DB, Thakkar VR, Patel MN. Biological significance of hetero-scaffolds based gold (III) complexes. **Acta Chimica Slovenica. 2018** Jun 19;65(2):333-43.
7. Kejela T, Thakkar VR, Patel RR. A novel strain of *Pseudomonas* inhibits *Colletotrichum gloeosporioides* and *Fusarium oxysporum* infections and promotes germination of coffee. **Rhizosphere. 2017** Dec 1;4:9-15.
8. Thakkar SS, Thakor P, Ray A, Doshi H, Thakkar VR. Benzothiazole analogues: synthesis, characterization, MO calculations with PM6 and DFT, in silico studies and in vitro antimalarial as DHFR inhibitors and antimicrobial activities. *Bioorganic & medicinal chemistry*. 2017 Oct 15;25(20):5396-406.
9. Thakor P, Subramanian RB, Thakkar SS, Ray A, Thakkar VR. Phytol induces ROS mediated apoptosis by induction of caspase 9 and 3 through activation of TRAIL, FAS and TNF receptors and inhibits tumor progression factor Glucose 6 phosphate dehydrogenase in lung carcinoma cell line (A549). **Biomedicine & Pharmacotherapy. 2017** Aug 1;92:491-500.

10. Karad SC, Purohit VB, Thummar RP, Vaghasiya BK, Kamani RD, Thakor P, Thakkar VR, Thakkar SS, Ray A, Raval DK. Synthesis and biological screening of novel 2-morpholinoquinoline nucleus clubbed with 1, 2, 4-oxadiazole motifs. **European journal of medicinal chemistry**. **2017** Jan 27; 126:894-909.
11. Thakor P, Song W, Subramanian RB, Thakkar VR, Vesey DA, Gobe GC. Maslinic acid inhibits proliferation of renal cell carcinoma cell lines and suppresses angiogenesis of endothelial cells. **Journal of kidney cancer and VHL**. **2017**; 4(1):16.
