



Dr. Ankit Sudhir,

Senior Assistant Professor, Biological Sciences

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Education

PhD – Sardar Patel University, Vallabh Vidyanagar

Title of the Thesis “Cloning, expression, characterization and genetic modification of L-asparaginase from *Bacillus licheniformis*”

MSc (Biotechnology) – Bioscience Department, Sardar Patel University

BSc (Biotechnology) – Anand Merchantile College of Science and Technology, Sardar Patel University

Key Skills

Dr. Ankit Sudhir is capable of providing comprehensive solutions to industries and academia in the following areas:

1. Enhancement of enzyme catalysis by gene modification using PCR based Site directed mutagenesis method.
2. Cloning and expression of genes responsible for industrially important proteins/enzymes.
3. Protein purification using size exclusion, ion exchange and affinity chromatographic techniques.
4. Characterization of purified proteins.
5. Molecular Identification of microorganisms i.e 16s rDNA based.
6. Microbial applications for a bioproduct and environmental solutions.
7. Content development and course designing for academic institutes.
8. Industrial connect for job placements and students’ internships.

Background

Joined GSFC University in July 2017

Scholarship and Accomplishments

Dr. Ankit Sudhir is a proficient researcher and his research interests are in Protein characterization and engineering. He focuses on industrially important enzymes to overcome the issues of enzyme catalysis and applications. As many enzymes have been recognized to have crucial role in medicine, diagnostics, waste management, waste water treatment. etc enhancing the catalytic properties and stability of these enzymes increases their applications and shelf-life in industries which is actually the need of the hour. Using PCR based site directed mutagenesis method he has successfully engineered

L-asparaginase enzyme from *B. licheniformis*. His doctoral studies focused on “Cloning, expression, characterization and genetic modification of L-asparaginase from *Bacillus licheniformis*.” He was able to enhance the catalytic activity of this enzyme and reduced the side effects of this therapeutic agent against Acute Lymphoblastic Leukemia (ALL). Apart from L-asparaginase, Dr. Sudhir has successfully engineered Xylanase enzyme from *Bacillus amyloliquefaciens* to check the effect of substitutions of amino acid residues at its substrate binding site. During his doctoral studies he was also awarded Project Fellowship in a University Grants Commission (UGC) major project entitled “Screening and Identification of a SSR marker linked to resistance against Fusarium wilt in tomato”. Attained 3rd Place in Gujarat (State level) graduate student Poster and oral presentation in GUJCOST sponsored Science Manthan, held at CHARUSAT, Changa. During the course of Ph.D in order to isolate potential microbial source for industrially important enzyme, Dr. Sudhir has honed skills on molecular identification (16s rDNA based) of micro-organisms and has many GeneBank submissions to his credit.

Dr. Sudhir has worked as a Post-Doctoral Research Associate at Marine Bioresource Centre (MBRC), GSBTM, Jamnagar, where he explored various microbial resources for economically important enzymes. As a Project Investigator, he led two projects entitled:

- i) Isolation of L-asparaginase (with low or no glutaminase) producing microorganisms from various sites of Gulf of Kachchh: Characterization of L-asparaginase from a potential isolate.
- ii) Isolation of phytase producing microorganisms and characterization of phytase from a potential isolate.

Dr. Sudhir has a teaching experience of more than 6 years at GSFC University wherein he also has served as Programme coordinator of B.Sc. Biological Sciences. He is actively involved in establishing instrumentation facilities of Microbiology and Molecular biology laboratories at GSFC University.

Dr. Sudhir has attended various state and national level faculty development programmes in order to remain updated and develop new teaching pedagogies. He teaches General microbiology, Recombinant DNA Technology, Bioprocess Technology and Genomics and Proteomics to under graduate students of B.Sc. Biotechnology Programme. He also teaches subjects like Microbiology, Emerging technologies, Genomics and Proteomics in Post graduate programmes of M.Sc. Biotechnology and Industrial microbiology. He is also Invited as an External trainer on Microbiology at Ami Lifesciences Pvt. Ltd. Karakhadi, Vadodara.

He has guided many students at undergraduate level for making working models and their research work. He has guided students of post graduate programme for their dissertation, a six months research programme for the partial fulfillment of their masters degree.

Dr. Sudhir has publications in the journals of national and international repute with good impact factor. Dr. Sudhir has worked as a Faculty mentor in a Students Startup and Innovation Policy (SSIP), Gujarat project where he has mentored students for the development of bio fertilizers. As a Co-convenor received a grant as a financial assistance from Gujarat State Biotechnology Mission (GSBTM) for organizing an International-level Webinar on “Plant Tissue Culture and Biotechnology: Current Trends and Future Perspectives” . He has done training on “Laboratory Quality Management System and Internal Audit as per ISO/IEC 17025:2017” and currently is a part of a Technical team for NABL accreditation of a Laboratory.

Dr. Sudhir is open to Academic, Industrial and consultancy projects in the thrust areas of Biotechnology and to troubleshoot processes in Biotechnology/Microbiology industries.

Five Most Cited Publications

- Prajapati A. S., Pawar V. A., Panchal K J, **Sudhir A. P.**, Bhaumik R. Dave, Patel D.H. and Subramanian R. B. (2018) Effects of substrate binding site residue substitutions of xynA from *Bacillus amyloliquefaciens* on substrate specificity. *BMC Biotechnology* 18 (9).
- **Sudhir A.P.**, Agarwaal V.V., Dave B.R., Patel D.H. and Subramanian R.B. (2016) Enhanced catalysis of L-asparaginase from *Bacillus licheniformis* by a rational redesign. *Enzyme and microbial technology*, 86: 1-6
- Dave B., **Sudhir A.P.** and Subramanian R.B. (2015) Purification and properties of an endoglucanase from *Thermoascus aurantiacus*. *Biotechnology Reports* 6: 85-90
- **Sudhir A.P.**, Dave B.R., Prajapati A., Panchal K., Patel D. and Subramanian R.B. (2014) Characterization of a recombinant glutaminase free L-Asparaginase (ansA3) enzyme with high catalytic activity from *Bacillus licheniformis*. *Applied Biochemistry and Biotechnology*, 174 (7): 2504-2515.
- **Sudhir A.P.**, Dave B.R., Trivedi K. A. and Subramanian R.B. (2012) Production and amplification of an l-asparaginase gene from actinomycete isolate *Streptomyces* ABR2, *Annals of microbiology*, 62: 1609-1614