

DR. SMITA NILEGAONKAR



Dr. Smita Nilegaonkar, PhD (Scientist E)

Research Interest:

1. Microbial production of industrially useful compounds like 2,3-Butanediol, vanillin, ethanol, methane, proteases, amylases, chitinase, collagenases, polyhydroxyalkanoates
2. Nutraceuticals: Prebiotics and antioxidants from plant resources

Education & Scientific Career:

Ph.D. in Biochemistry, 1982 MACS-Agharkar Research Institute, Pune University

M.Sc. in Biochemistry, 1976 Pune University

B.Sc. in Chemistry, 1974, Fergusson College, Pune University

Joined Maharashtra Association for the Cultivation of Science in Nov 1980 as **Junior scientific assistant**

Working as Scientist since 1994

Scientist B	15th April 1994
Scientist C	15th April 2000
Scientist D	15th April 2006
Scientist E	15th April 2011

Google Scholar Profile:

<http://scholar.google.co.in/citations?user=cJEHBM4AAAAJ&hl=en>

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RESEARCH FOCUS/INTERESTS

1. Production of protease from *Pseudomonas* sp. and *Bacillus* sp. Its application in leather industry for dehairing, soaking and bating, detergent industry, isolation of silver from x-ray and photographic film
2. Production of chitinase by saprophytic Entomophthorales specifically, *Basidiobolus* sp. a novel bio control agent against phytopathogenic fungi
Production of N-acetyl D-glucosamine from fungal biomass.

3. Production of biodegradable polymer by *Bacillus* sp. and *Halomonas* sp.
Use of waste materials such as banana and orange peels, deoiled cakes for production of biodegradable polymer
Formulation of a thin film from biodegradable polymer -useful in packaging of solid and liquid materials
4. Production of collagenase by *Stenotrophomonas maltophilia* and its application in formation of value added products like small peptides of 3-10kDa and hydroxyl-proline
5. Use of agro-waste materials for production of enzymes and biomaterials
6. Development of polyphenol enriched food supplements using indigenous plant materials and assess their multi-functionality by *in-vitro* and *in-vivo* studies followed by human trials in healthy adults
7. Formulation of prebiotic enriched nutritional supplements from indigenous plant materials *in-vivo*, *in-vitro* studies of the formulations followed by human trials in healthy adults

PUBLICATIONS

1. M D Kasote, S S Nilegaonkar* and V V Agte (2014), Effect of different processing methods on resistant starch content and *in vitro* starch digestibility of some common Indian pulses Journal of Scientific & Industrial Research Vol. 73, 541-546
2. V. P. Zambare, S. S. Nilegaonkar*, P.R.Kshirsagar, P. P. Kanekar (2014) Scale up production of Protease using *Pseudomonas aeruginosa* MCM B-327 and its Detergent Compatibility J. Biochemical Technology 5(2): 698-707
3. Pranav Kshirsagar, Rahul Suttar, Smita Nilegaonkar*, Snehal Kulkarni, Pradnya Kanekar. (2013),. Scale up production of polyhydroxyalkanoate (PHA) at different aeration, agitation and controlled dissolved oxygen levels in fermenter using *Halomonas campisalis* MCM B-1027 . Journal of Biochemical Technology. 4(1):512-517.
4. Mishra P., Kshirsagar P., *Nilegaonkar S.S, Singh S.K (2012) Statistical optimization of medium components for production of extracellular chitinase by *Basidiobolus ranarum*: a novel biocontrol agent against plant pathogenic fungi Journal of Basic Microbiology, 52, 1–10
5. Zambare VP, *Nilegaonkar SS, Kanekar PP (2011), A novel extracellular protease from *Pseudomonas aeruginosa* MCM B-327:Enzyme production and its partial characterization New Biotechnology 28(2),173-181
6. Yadav S., Gite S., Nilegaonkar S., Agte V (2011) Effect of supplementation of micronutrients and phytochemicals to fructooligosaccharides on growth response of probiotics and *E. coli* Bio Factors, 37(1), 58-64
7. Kulkarni S.O., Kanekar P.P., Nilegaonkar S.S., Sarnaik S.S. and Jog J.P. (2010) Production and characterization of a biodegradable poly (hydroxybutyrate - co- hydroxyvalerate) (PHB-co-PHV) copolymer by moderately haloalkalitolerant *Halomonas campisalis* MCM B- 1027 isolated from Lonar Lake, India Bioresource Technology,101, 9765-9771

8. Nilegaonkar SS, Zambare VP, Kanekar PP, Dhakephalkar PK and Sarnaik SS (2007) Production and partial characterization of dehairing protease from *Bacillus cereus* MCM B-326 Biores. Technol, 98: 1238 – 1245
9. PP Kanekar, SS Nilegaonkar, SS Sarnaik, AS Kelkar (2002) Optimization of protease activity of alkaliphilic bacteria isolated from an alkaline lake in India. Bioresource technology 85 (1), 87-93
10. SS Nilegaonkar, PP Kanekar, SS Sarnaik, AS Kelkar (2002) Production, isolation and characterization of extracellular protease of an alkaliphilic strain of *Arthrobacter ramosus*, MCM B-351 isolated from the alkaline lake of Lonar, India World Journal of Microbiology and Biotechnology 18 (8), 785-789

Book chapter

1. PP Kanekar, SO Kulkarni, SS Nilegaonkar, SS Sarnaik, PR Kshirsagar, M. Ponraj, SP Kanekar "Environmental friendly microbial polymers, Polyhydroxyalkanoates (PHAs) for packaging and biomedical applications" published in Polymers in Packaging Applications, Apple Academy Press, Canada Editors: Devarajan Thangadurai, Jeyabalan Sangeetha
2. Pradnya Pralhad Kanekar, Amaraja Abhay Joshi, Snehal Omkar Kulkarni, Suchitra Baburao Borgave, Seema Shreepad Sarnaik, Smita Shrikant Nilegaonkar, Anita Satish Kelkar, and Rebecca Sandeep Thombre Biotechnological Potential of Alkaliphilic Microorganisms, In: Biotechnology and Bioinformatics: Advances and Applications for Bioenergy, Bioremediation and Biopharmaceutical Research pp.250-279 Editors: Devarajan Thangadurai, Jeyabalan Sangeetha Apple academic press, Canada, USA, 2015
3. Smita Nilegaonkar, Vaishali Agte (2010) 'In vitro growth response of lactic cultures to mucilaginous materials' In Current Topics on Bioprocessing in Food Industry Vol III, pp 39-47 Ed. L. Venkateswar Rao, Ashok Pandey, Christian Larroche, Carlos R Soccol & Claude-Gilles Dussap Asiatech Publishers, New Delhi Smita Nilegaonkar, Vaishali Agte (2010) 'Prebiotics' In Comprehensive Food Fermentation Biotechnology Vol II pp.466-487 Ed. Ashok Pandey, Christian Larroche, Edgard Gnansounou & Poonam Singh Asiatech Publishers, New Delhi
4. Smita Nilegaonkar, Vaishali Agte (2010) 'Prebiotics' In Comprehensive Food Fermentation Biotechnology Vol II pp.466-487 Ed. Ashok Pandey, Christian Larroche, Edgard Gnansounou & Poonam Singh Asiatech Publishers, New Delhi

Patents

Indian Patent Granted

1. Kanekar P.P., Nilegaonkar S.S., Ponraj M., Sarnaik S.S., Jog J. Title: A process for production of a Co-polymer PHB-co-PHV by *Bacillus cereus* Patent No. 244785

2. Kanekar P.P., Nilegaonkar S.S., Sarnaik S.S. and Kelkar A.S. (No. 24/BOM/97). Production of protease using deoiled soyabean cake by *Arthrobacter ramosus* and *Bacillus alcalophilus*.

Patents filed International

1. S. S. Nilegaonkar, V. P. Zambare, P. P. Kanekar, P. K. Dhakephalkar, S. S. Sarnaik, Rama Rajaram, N. K. Chandrababu, B. Ramanaiah, P. Balram, Y. Sai Kumari, T. Ramasamy A novel protease for industrial application. US Patent No. : US 2008/0220499 A1,
2. S. S. Nilegaonkar, V. P. Zambare, P. P. Kanekar, P. K. Dhakephalkar, S. S. Sarnaik, N. K. Chandrababu, Rama Rajaram, B. Ramanaiah, T. Ramasami, Y. K. Saikumari and P. Balaram German Patent on "A novel protease for industrial application" Filing date 23rd March, 2007 (German Patent NO. 102007013950.2.)

Patents filed India

1. S. S. Nilegaonkar, V. P. Zambare, P. P. Kanekar P. K. Dhakephalkar, Sarnaik S.S., R. Rajaram, N. K. Chandrababu, B. Ramanaiah, P. Balaram, T. Ramasami. A novel protease for industrial application. Indian Application No. 2471/DEL/2006.
2. Kanekar P.P., Nilegaonkar S.S., Jotshi J., Sarnaik S.S., Dhakephalkar P.K. A process for production of microbial collagenase Application No.: 2620/Mum/2009
3. Kanekar P.P., Nilegaonkar S.S., Pradhan S., Sarnaik S.S., Jog J. Biodegradable polymer from haloalkalitolerant. *Halomonas campisalis* and process for its production. Indian Patent No.: 1438/DEL/2008
4. Vaishali Agte, Smita Nilegaonkar, Snehal Gite and Supriya Yadav "A composition with antiglycating property for preventing secondary complications of diabetes" Application No.: 2889/MUM/2013 of 05.09.2013

FUNDING & COLLABORATORS

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- NMITLI-CSIR, Government of India, New Delhi

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