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Details of the Collaborative Activity

2019-20

Name of the Collaborating Institute: Savitribai Phule Pune University (SPPU), Pune

Name of the Collaborating Department: Yenepoya Research Center (YRC)

Activities:

Research Training:

Dr. Mangesh V. Suryavanshi, PDF from YRC had attended Research training program offered by the CFTRI-Mysore on Strategies for Probiotic Dairy Product Development on 22nd to 24th Jan, 2020 and national conference on “Harnessing Microbial Wealth for Start-ups in Life Sciences at Savitribai Phule Pune University (SPPU), Pune.

Joint Research and Publication

Waghmode S, Suryavanshi M, Sharma D, Satpute SK. Planococcus Species—An Imminent Resource to Explore Biosurfactant and Bioactive Metabolites for Industrial Applications. *Frontiers in Bioengineering and Biotechnology*. 2020 Aug 18; 8:996.

ATTESTED

Dr. Gangadhara Somayaji K.S.
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University Road, Derlakatte
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Ref: No. Y/REG/ACA/JRF/duty leave/2020

13.01.2020

Mr. Mangesh Suryavanshi
PhD SERB-NPDF Fellow
Yenepoya Research Centre

Sub: Permission for on duty leave

Ref: Your letter dated 03.01.2020

Permission is granted to you to attend the short term course and Conference from 22nd to 31st January 2020 at Pune as noted bellow.

Sl.No	Period	Work Duty	Nature of work
1.	22-24 January 2020	Participation in Short Term Course offered by CSIR – CFTRI Mysore: Training Programme On – “Strategies For Probiotic Dairy Product Development”	Hands on training on probiotics mass production.
2.	29-31 January 2020	Attendance for National Conference on “Harnessing Microbial Wealth for Start-ups in Life Sciences at SPPU, Pune”	Networking and poster presentation at National Conference SPPU, Pune

The days from 20.01.2020 to 01.02.2020 shall be treated as on duty.



REGISTRAR

Copy to:

- Dy. Director, YRC
- File copy

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ATTESTED


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Planococcus Species – An Imminent Resource to Explore Biosurfactant and Bioactive Metabolites for Industrial Applications

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The marine environment represents a well-off and diverse group of microbes, which offers an enormous natural bioactive compounds of commercial importance. These natural products have expanded rigorous awareness due to their widespread stability and functionality under harsh environmental conditions. The genus *Planococcus* is a halophilic bacterium known for the production of diverse secondary metabolites such as 2-acetamido-2-deoxy- α -d-glucopyranosyl-(1, 2)- β -d-fructofuranose exhibiting stabilizing effect and methyl glucosyl-3,4-dehydro-apo-8-lycopenoate displaying antioxidant activity. The genus *Planococcus* is reported generally for hydrocarbon degradation in comparison with biosurfactant/bioemulsifier secretion. Although *Planococcus* was proposed in 1894, it seized long stretch (till 1970) to get accommodated under the genus *Planococcus* authentically. Large-scale biosurfactant production from *Planococcus* was reported in 2014 with partial characterization. For the first time in 2019, we documented genomic and functional analysis of *Planococcus* sp. along with the physico-chemical properties of its biosurfactant. In 2020, again we screened biosurfactant for pharmacological applications. The present review discusses the comprehensive genomic insights and physical properties of *Planococcus*-derived biosurfactant. Moreover, we also highlight the prospects and challenges in biosurfactant production from *Planococcus* sp. Among ~102 reports on biosurfactant produced by marine bacteria, 43 were of glycolipid and 59 were non-glycolipid type. Under other biosurfactant type, they were identified as lipopeptide (20) like surfactin (5), glycolipoprotein/lipoprotein (12), and other non-glycolipid (22). *Planococcus* sp. generally produces glycolipid-type biosurfactant (4) and exopolysaccharides (2). The single report documented in the literature is on biosurfactant production (glycolipid + non glycolipid) by diverse marine microbes (39) suggesting their novelty and diversity for biosurfactant secretion.

Keywords: *Planococcus*, biosurfactant, genomic insight, glycolipid, marine, hydrocarbon degradation

Abbreviations: BS, biosurfactant; BE, bioemulsifier; CMC, critical micelle concentration; CA, contact angle; EPS, exopolysaccharide; IFT, interfacial tension; MEOR, microbial-enhanced oil recovery; RSM, response surface methodology; ST, surface tension.

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