

**CHRIST**(DEEMED TO BE UNIVERSITY)
BANGALORE | DELHI NCR | PUNE

Notice for the PhD Viva Voce Examination

Ms Mittu Koshy, Registration Number: 1981605, PhD Scholar at the Department of Life Sciences, School of Sciences, CHRIST (Deemed to be University) will defend her PhD thesis at the public viva-voce examination on Wednesday, 06 May 2026 at 11.30 am in Room No. 628, 6th Floor, R&D Block, CHRIST (Deemed to be University), Bengaluru - 560029, Karnataka, India.

| | | |
|-------------------------------|---|---|
| Title of the Thesis | : | Isolation and Characterization of Detergent-Degrading Bacteria and Analyzing its Potential as Biofertilizer |
| Discipline | : | Biotechnology |
| External Examiner - I | : | Dr Jisha M S Head and Professor School of Biosciences Mahatma Gandhi University Priyadarshini Hills Kottayam - 686560 Kerala |
| External Examiner - II | : | Dr Philip Raj Abraham Scientist - D Pathology and Microbiology Division ICMR - National Institute of Nutrition Osmania University Hyderabad - 500007 Telangana |
| Supervisor | : | Dr Biljo V Joseph Associate Professor Department of Life Sciences School of Sciences CHRIST (Deemed to be University) Bengaluru - 560029 Karnataka |

The members of the Research Advisory Committee of the Scholar, the faculty members of the Department and the School, interested experts and research scholars of all the branches of research are cordially invited to attend this open viva-voce examination.

Registrar (Academics)

Place: Bengaluru
Date: 21 April 2026

ABSTRACT

Abstract

Sodium dodecyl sulfate is an anionic surfactant and one of the major constituents in cleaning agents. It is a contributor of chemical pollution in water bodies also. The present study is majorly focusing on bioremediation of SDS from domestic graywater. SDS-utilizing bacteria were isolated using basal media with 0.05 % SDS as the sole carbon source. The soil and water samples were collected from various areas of microbial diversity and isolated thirty-nine bacterial isolates. The isolates were further screened for potentialities such as nitrogen fixation, phosphorus, and potassium solubilization, four isolated were not exhibited any plant growth-promoting traits and thirty-four were selected for further studies. Based on plant growth promoting traits, nine bacteria were selected and identified by 16S rRNA sequencing. The decrease in SDS concentration from the SDS broth by bacteria was studied using Stains-all dye. Based on the capability on the bacteria in reducing SDS from the medium, six bacteria were selected. Gas chromatography-mass spectroscopy revealed the major SDS degradation product as 1-dodecanol. The six isolates were further checked for more plant growth promoting traits such as zinc solubilization, sulfur oxidation, calcite solubilization, siderophore and hormone production to assess their suitability as biofertilizers. The bacterial isolates were then applied to laundry first wash water, and SDS remediation from it was studied. Later, the treated water, also enriched with plant growth-promoting bacteria was used to irrigate chili and tomato seedlings.

Keywords: *SDS-degradation, plant growth-promoting bacteria, anionic detergent, bacterial bioremediation, Galleria mellonella*

Publications:

1. **Koshy M, Joseph B V. (2025b)** Deciphering the plant growth-promoting traits of bacteria capable of sodium dodecyl sulfate removal from graywater: A sustainable approach for water reuse for irrigation. *Antonie van Leeuwenhoek* 118 175. <https://doi.org/10.1007/s10482-025-02187-5>
2. **Koshy M, Joseph B V. (2025a)** Fortification of laundry water with bacteria capable of sodium dodecyl sulfate (SDS) remediation and plant growth promotion. A sustainable way to reuse water for irrigation. *Journal of microbiology, biotechnology and food sciences* e12414. <https://doi.org/10.55251/jmbfs.12414>
3. **Koshy M, Joseph B V. (2025)** Spectrometric analysis of decrease in sodium dodecyl sulfate (SDS) concentration by *Klebsiella* species using the Stains-All dye. *Microbiology (N Y)* 94:128–133. <https://doi.org/10.1134/S0026261724606419>