

Scientists develop biosensor for accurate detection of environmental pollutants

New Delhi, Nov 12 (India Science Wire): Sodium Dodecyl Sulphate or Sodium Lauryl Sulfate (SDS) is widely used in soaps, toothpaste, creams and shampoos, laundry detergents in households, agricultural operations, laboratories and industries. Its subsequent disposal in waterways causes harmful effects on aquatic organisms, environmental microcosms, and associated living organisms. It also deteriorates the quality of drinking water. Until now, there were no specific biosensors developed to date for the detection of SDS with high precision.

A team of researchers at the Indian Institute of Technology Roorkee (IIT-R) claimed to have developed the world's first specific reliable bacterial biosensor to detect the presence of SDS. According to the researchers, they genetically redesigned DNA of a specified bacterium (*Pseudomonas aeruginosa*) for their research.

"We have developed a biosensor to detect the presence of harmful detergent (SDS) in the environment after redesigning the DNA in bacteria (which gives signal in the form of a green fluorescent protein. The highlight of this biosensor is its sensitivity to even minute quantities of SDS in the environment and its ability to distinguish between SDS and SDBS (Sodium dodecylbenzenesulfonate)" said Naveen Kumar Navani, Department of Biotechnology, IIT Roorkee.

"This is the world's first whole-cell bacterial biosensor for direct, specific and efficient detection of SDS, without involving sample preparation steps, toxic chemicals, sophisticated polymers and sensor development steps" said Sourik Dey, final year MSc student at IIT Roorkee and lead author of the study.

The findings have been published in the journal *Biosensors and Bioelectronics*. The research team includes Naveen Kumar Navani, Sourik Dey, Shahnawaz Ahmad Baba, Ankita Bhatt and Rajat Dhyani. (India Science Wire)

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