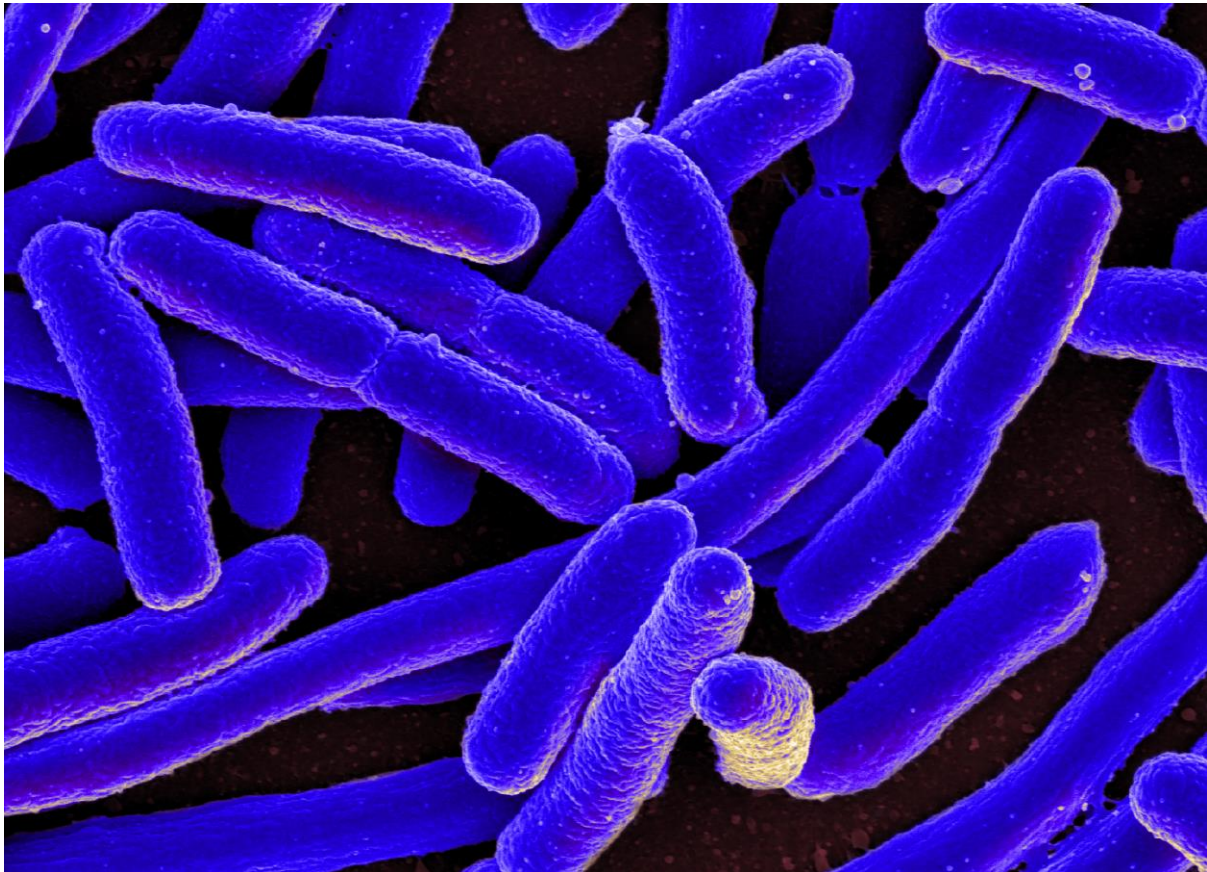


DBT-NABI scientists develop a new method to detect Escherichia coli

New Delhi, Nov 04: E. coli is the most common foodborne bacteria causing illnesses including diarrhea, fever, and death if left undiagnosed and untreated, which makes its detection most important. Traditional detection methods such as culture, PCR, or ELISA are time-consuming and require skilled manpower.



A team of researchers at DBT-National Agri-Food Biotechnology Institute (DBT-NABI), Mohali, have come up with a solution. An aptamer called ssDNA is a stable, sensitive, and selective biomolecule used extensively for biodetection.

To provide naked eye detection, gold nanoparticles (AuNPs) were used, and to increase the aptamer conjugation, AuNPs were covered with Graphene Oxide. Thus, the overall sensitivity of the designed nanoprobe was also augmented. Therefore, exploiting the properties of gold nanoparticles and graphene oxide, a detection platform with aptamer conjugation has been developed in this study.

In the manifestation of E.coli cells, the visible color change was observed from red to blue within an hour of incubation. The limit of detection observed visually was 102 cells/mL with GO coating and 103 cells/mL without GO. The detection limit in real-time coconut water samples was also 102 cells/mL. This platform was found to be applicable in glass capillary which provides opportunities for making a point of care detection device.

An article on the work was published in Journal “Sensors and Actuators: B. Chemical”.

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