

## **DBT-NABI researchers develop new tool to detect and destroy foodborne bacteria**

New Delhi, Nov 12: Foodborne diseases add an extra burden on the health system. The conventional methods used to monitor the food bacterial contamination are cumbersome. Nanotechnology has emerged as a wonderful tool for bacterial detection. The unique optical and plasmonic properties of metallic nanoparticles make them exceptional for their integration into biosensors for bacterial detection.

In a new study, a team of researchers of DBT- National Agri-Food Biotechnology Institute (DBT-NABI) have developed graphene oxide (GO) coated gold nanoparticles (AuNPs) based hybrid antibody biosensors that promises faster, more specific, and better sensitive detection of foodborne bacterial contamination. Polyethylene glycol (PEG) grafted GO coated AuNPs were covalently conjugated with two different types of antibodies using well known EDC-NHS chemistry.



Various spectrophotometric and microscopic techniques have been used to assess the sensitivity of the prepared biosensor. A colorimetric and spectrophotometric change upto  $10^3$  and  $10^2$  CFU, respectively was observed by incubating the probe for 5 mins with Escherichia coli and Salmonella typhimurium. Immobilized antibodies on hybrid nanoparticle biosensors are specific for bacteria. The prepared biosensors also exhibited specific photoablation of bacteria after infra-red (NIR) exposure. Rapid optical detection and extermination of foodborne bacteria were achieved by antibody functionalized hybrid nanoparticles based biosensor. This work was accepted for publication in Sensors and Actuators: B. Chemical

Contact Person & Contact Details: Dr. Nitin Singhal, Email: [nitin@nabi.res.in](mailto:nitin@nabi.res.in)

Link: <https://nabi.res.in/>