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Development of gold nanoparticle based lateral flow test platform for rapid detection of food pathogens

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Lateral flow immunoassay (LFIA) tests have been a popular platform for rapid immunoassays since their introduction in the mid-1980s. It is also known as immunochromatographic strip tests described in the 1960s and the first commercial application as a pregnancy test was in 1988. LFIA tests are simple diagnostic kits commonly based on a nitrocellulose membrane matrix. They are used to detect the presence/absence of a target analyte in a sample. Today this technique has found and growing applications in proteomics, therapeutic monitoring, infectious and chronic disease, non-human applications (veterinary), agriculture, biowarfare, environmental health and safety, food industry. In this study, a platform for food pathogen detection by Lateral Flow technology, based on gold nanoparticles (GNP-35nm) was developed. The platform was tested on both positive controls and real field collected samples. Parameters including, flow rate, antibody concentration at test and control lines and conjugate concentration were evaluated and optimized. The specificity of the strips was tested on both laboratory strains and field isolates of various *Salmonella* species. The strips exhibited more than 90% specificity on the field isolates. Currently, the strips are planned to be integrated in nationwide screening programs..

Biography

Dilek Cam has completed her MSc degree from Yeditepe University. The thesis is about cellular uptake (cancer and healthy cells) and cytotoxicity of modified silver nanoparticles. She is a PhD student and research assistant in the department of Biological Sciences at Middle East Technical University (METU). She has published papers related with rapid microbial identification based on surface enhanced Raman spectroscopy and cellular uptake, localization and cytotoxicity of gold and silver nanoparticles (modified/unmodified). Her research interests are; Nanobiotechnology, Nanotoxicity, nanobiosensors, cancer targeting and detection.

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