

Development of new lateral-flow immunochromatographic strip using colloidal gold and mesoporous silica nanoparticles for rapid diagnosis of active schistosomiasis

Manal Kamel

Theodor Bilharz Research Institute, Egypt.



Abstract

Development of new sandwich based lateral flow immunochromatographic strip (LFIS) to detect circulating *Schistosoma mansoni* antigen (CSA) in serum and urine samples of patients with active schistosomiasis. Methods: This highly sensitive LFIS was prepared by using anti – *S. mansoni* soluble egg antigen monoclonal antibody conjugated gold nanoparticles (MAb-AuNps) as a primary antibody while mobile crystalline material (MCM)-41-MAb bioconjugate was immobilized at the test line as secondary antibody. Primary and secondary antibodies formed a sandwich complex with CSA in the sample, immobilized at the test line and resulting in a distinct red color. The assay reliability was examined by using urine and serum samples of 60 *S. mansoni* infected patients, 20 patients with other parasites, 20 healthy individuals and results were compared with those obtained via sandwich ELISA. Results: The visual detection limit of CSA by LFIS was 3ng/ml compared to 30ng/ml low detection limit by ELISA. The sensitivity and specificity of LFIS in urine samples were 98.3% and 97.5 % respectively compared to 93.5% and 90% by ELISA. In serum samples, it was 100% and 97.5% respectively compared to 97% and 95% by ELISA.

This new LFIS offers a sensitive, rapid (10 min) and field applicable alternative technique for diagnosis of active schistosomiasis.

Biography:

Manal M Kamel is a Professor of Immunology at Theodor Bilharz Research Institute (TBRI), Giza, Egypt. She has graduated from the Faculty of Medicine, Cairo University. Her Postgraduate studies were in Immunology and Clinical Pathology. She has a great experience in the fields of antigen preparation, nanotechnology, monoclonal production, CB MSCs transplantation. She has supervised (9) MSc and PhD thesis, two of them in the field of nanotechnology with stem cells and monoclonal antibodies. She has published more than 23 papers in reputed journals and has been serving as Member in the selected referee lists of: The International Journal of Immunological Studies-Cell proliferation.

[18th International Conference and Exhibition on Materials Science and Chemistry](#); Berlin, Germany -May 18-19,2020.

Abstract Citation:

Manal Kamel, Development of new lateral-flow immunochromatographic strip using colloidal gold and mesoporous silica nanoparticles for rapid diagnosis of active schistosomiasis, Materials Chemistry 2020, 18th International Conference and Exhibition on Materials Science and Chemistry; Berlin, Germany -May 18-19,2020.

<https://materialschemistry.chemistryconferences.org/abstract/2020/development-of-new-lateral-flow-immunochromatographic-strip-using-colloidal-gold-and-mesoporous-silica-nanoparticles-for-rapid-diagnosis-of-active-schistosomiasis>

