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Screen Printed Electrodes (SPE) based nano-immunosensor for detection of bilharzia in Kenya

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Bilharzia is one of the Neglected Tropical Diseases (NTDs), a group of chronic disabling infections affecting more than a billion people worldwide, mainly in Africa and mostly the poor. In Kenya, these NTDs affects more than 50% of the population fueling the vicious circle of poverty and stigma that leaves people unable to work, go to school, or participate in family and community life. Highly sensitive detection and accurate analysis is essential for the early detection, treatment, and management of these diseases. Current methods of detection rely on microscopic detection which is tedious, unreliable and suffers poor sensitivity. In this work, a Nano-based immunosensor for early detection which rely on nano-immunological response between an antibodies against Bilharzia conjugated to nanoparticles and Bilharzia antigen will be reported. The conjugation of the antibodies with nanoparticles combines the unique properties of the nanoparticles with the specific and selective recognition ability of the antibodies to antigens. The hybrid product has improved cellular uptake as well as the major intracellular stability and may show versatility and specificity with improved analytical signal important for rapid, sensitive and real-time point of care diagnosis. The work will report the use of screen printed electrodes for a potential development of a Nano-device for point-of-care diagnostic of Bilharzia.

Key Words: Nano-immunosensor, Nanoparticles, Nano-immunological Response, Screen Printed Electrodes