World Academy of Science, Engineering and Technology
International Journal of Biomedical and Biological Engineering
Vol:18, No:03, 2024

Novel Ultrasensitive Point of Care Device for Diagnosis of Human Schistosomiasis Mansoni

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Abstract : Schistosomiasis is infection with blood flukes of the genus Schistosoma, which are acquired trans-cutaneously by swimming or wading in contaminated freshwater. The present study was proposed to produce ultra-sensitive, field-friendly high-throughput rapid immunochromatography diagnostic device for accurate detection of asymptomatic parasite carriers in schistosomiasis pre-elimination settings.For assessing diagnostic potential of rapid device, 50 blood samples from patients with schistosomiasis mansoni, 29 other proven parasitic diseases and 25 blood samples as negative control were from healthy individuals were used. The sensitivity of Quantitative antigen-capture nano-ELISAwas 82 %, and specificity was 87.1 %, where the sensitivity of Nano Dot- ELISA was 86 % and specificity was 90.7 %. The sensitivity of diagnostic device was 78 % and specificity was 85.2 %, with PPV and NPV of 86.2 % and 83.1 %, respectively.The Point of care device resulted in a good performance for the diagnosis of low-intensity infections, it was able to identify 19 out of 25 (76 %) individuals with □7 eggs, 10 out of 14 individuals (71.4 %) with 11–99 eggs and 100 % of individuals with 100–399 eggs.

Keywords : schistosomiasis, immunochromatography, naon-dot-ELISa, diagnostis device
Conference Title : ICBAHS 2024 : International Conference on Biomedical and Health Sciences
Conference Location : Dubai, United Arab Emirates
Conference Dates : March 11-12, 2024