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Development of prostatic exosomal protein (PSEP) lateral flow chromatographic strips for detection of chronic prostatitis

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Chronic prostatitis/Chronic pelvic pain syndrome (CP/CPPS) is a multifactorial medical condition and a prevalent disease for which there is no standardized diagnosis and therapy. Recently, PSEP (Prostatic exosomal protein) ELISA methodology was developed to be used as a potential indicator of CP/CPPS. Multi-center clinical trials performed in China demonstrated that CP/CPPS patients present elevated PSEP in void urine when compared to that of the healthy men. Our current study is designed to further develop a PSEP point of care (POC) platform for large-scale screening of CP/CPPS patients. To set up a rapid and simple immunodiagnostic assay for CP/CPPS detection, PSEP-binding antibody was first conjugated to colloidal gold particles and immobilized onto glass or polyester fibers. Using transmission electron microscopy (TEM), the average diameter of the colloidal gold particles was determined. The formation of antibody-colloidal gold conjugates was monitored using UV spectroscopy. A second PSEP capturing antibody was coated on the nitrocellulose membrane (Test line). Goat anti-mouse IgG was used to prepare the control line (Control line). The lateral flow chromatographic strips (LFCS) were then assembled into working cassettes (Figure). The PSEP present in the urines of CP/CPPS patient was captured as the urine samples migrated through the T-line. A purple or red colored-T-line was evident as the PSEP in the CP/CPPS urines interacted with the PSEP capturing antibody. Our results showed that strip (a) contrasted sharply with the lack of T-line reaction with the control urine from the healthy men and strip (b) shows the stability and reproducibility of LFCS that were excellent after storage of the strips at 4°C for 6 months. Thus, the immuno chromatographic strips prepared by this methodology can be used in the study of rapid and one-step screening of CP/CPPS.

Biography

Jiao Zhang is graduated from Southeast University School of Clinical Medicine, where she obtained her MD and PhD degrees in Oncology with an additional Master's degree in public health and epidemiology. She has participated in Post-Doctoral Research in Prostate Cancer at Brody School of Medicine of East Carolina University in USA. In addition to her research interests in cancer genetics, she has studied the POC adaptation of PSEP in CP/CPPS detection.

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