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快速檢測金黃色葡萄球菌試片

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Abstract

Staphylococcus aureus (*S. aureus*) causes a variety of suppurative (pus-forming) infections and toxicity in human. Most of the methods for determining *S. aureus* needed long procedure, specific machine. The aim of this study was to develop an immunochromatographic strip for *S. aureus*. This self-assembled immunochromatographic strip will be used for homecare, food poisoning and point-of-care in sample diagnosis and the advantages of this strip was no pretreatment, low sample requirement, easy operation, rapid determination, low price, no cross-reaction, long-term preservation, no machine needed etc.

The sample pad and nitrocellulose membrane were immersed in 10% CH_3OH solution for 30 min, then dried. Sample pad, absorbent pad and nitrocellulose membrane were fixed on plastic backing. Test line 1 and test line 2 were loaded on nitrocellulose membrane, and dried. The strip was blocked with casein buffer for 60 min, and dried. 0.5 mL of 1% $HAuCl_4$ was added into 50 mL of deionized H_2O, and heated to boiling. Then, 1% tri-sodium citrate was added, heated to boiling, and cooling down, then adjusted to pH 7.0 by 0.2 M K_2CO_3. The anti-protein A pAbs were conjugated with colloidal gold nanoparticles. 10 μg of the purified anti-Protein A pAbs were added into 1 mL of colloidal gold nanoparticles (25 nm diameter) solution, and incubated for 5 min in order to conjugate the antibodies with the colloidal gold nanoparticles.

The concentrations with 0.01~100 μg/mL of protein A could be determined by this self-assembled *S. aureus* immunochromatographic strip and the detection limit was 196 cells/mL of *S. aureus*. It had no cross reaction for *E. coli* and *Salmonella*. The self-assembled *S. aureus* immunochromatographic strip could determine about 196 cells/mL *S. aureus*. The detection time was 3-5 min and had no cross reaction for *E. coli* and *Salmonella*.