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Development of lateral-flow immunoassay for the diagnosis of laryngopharyngeal reflux disease

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A number of patients who complain of laryngopharyngeal reflux disease (LPR) is on the gradual increase due to changes in climate and environment. LPR causes hoarseness, frequent throat clearing, bitter taste in the mouth, referred ear pain, chronic cough and even larynx cancer. However, the effective treatment of LPR is difficult because the treatment yet stay in the inhibition of gastric acid secretion as well as the symptoms persist after treatment. Therefore, appropriate treatment through accurate and rapid diagnosis is necessary. Since pepsin is proteolytic enzyme produced only in the stomach, detection techniques of pepsin in saliva is useful as a sensitive and non-invasive method for the reflux of stomach contents. Therefore, pepsin is one of the most important biomarkers to diagnose LPR. Herein, we report on a new approach to design an immunoassay based lateral flow immunochromatographic assay for the rapid detection of pepsin. The strip consisted of four main components: sample pad, conjugate pad, membrane and absorbent pad. Nitrocellulose membrane was separately coated with goat anti-rabbit antibodies (control line) and monoclonal anti-pepsin antibodies (test line). The detector reagent consisted of gold nanoparticles coated with polyclonal anti-pepsin antibodies, which saturated the conjugated pad. When pepsin-containing samples were applied to the sample pad, the antigen initially reacted with polyclonal antibody-coated gold nanoparticles and then reacted with the fixed monoclonal antibody on the membrane. These reactions resulted in red line at the test line, with intensity proportional to the pepsin concentration. In this ways, we investigate the utility of lateral immunoassay to determine pepsin in biological samples (i.e., saliva).

Biography

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