

Immuno-chromatographic Cortisol Biosensor Using Enzyme-labeled Conjugate

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To replace time-consuming laboratory analysis and facilitate point-of-care measurement of cortisol, we developed an immuno-chromatographic biosensor system utilizing disposable test strips and an optical analyzer. To realize an immuno-chromatographic test strip for competitive and enzyme reactions, a glucose oxidase (GOD)-cortisol conjugate was newly synthesized. Moreover, a cortisol biosensor system consisting of a disposable test strip ($5 \times 1.5 \times 50 \text{ mm}^3$) and a monitor was fabricated. Considering the error bar (SD) of reflectances, the cortisol concentrations were distinguished by 0, 5, and 10 ng/ml. Thus, it was indicated that a three-scale semiquantitative analysis of cortisol concentrations, such as low, middle, and high between 1 and 10 ng/ml, could be possible in the analysis. Our findings indicate the potential utility of the cortisol biosensor for point-of-use measurements in hospitals.

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