

A Novel Multichannel Immunosensor for Determination of Serum Hepatic Fibrosis Markers

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(Received November 17, 2006; accepted December 21, 2006)

Key words: biosensor array, serum marker, hepatic fibrosis, MEMS, PPD

In this study, we develop a novel biosensor with multichannels to detect three hepatic fibrosis markers: hyaluronic acid (HA), laminin (LN) and type IV collagen (IV-C). By using micro mechanical system technology, a chip including eight gold electrodes is fabricated for detecting up to eight markers simultaneously. Different antibodies of serum markers are embedded in poly(o-phenylenediamine) by local electrochemical polymerization, forming semi-insulated membranes on different gold electrodes. The changes in peak currents caused by the immunoreactions are detected. The results show that the linear ranges for HA, LN and IV-C are 9.9–88.8, 2.0–107 and 1.5–6 ng/ml, with sensitivities of 0.2122, 0.6155 and 0.7742% / (ng/ml), respectively. The immunosensing technology is compared with conventional radioimmunoassay (RIA) technology. It is found that the two measures have similar sensitivities and consistency, while the immunosensor demonstrates the advantages of time saving and cost effectiveness over RIA.

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