

The Introduction of Gold nanoparticles-conjugated pAb for the sensitivity improvement on Arrayed Polydiacetylene Biosensors

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Polydiacetylene (PDA) liposomes which possess unique properties and that properties allow liposomes to change color and emit fluorescence in response to stimulus such as temperature, antibody-antigen interaction, variations in pH, mechanical press and organic solvent, have been extensively studied as signal transducers in biosensor applications. In this research, we demonstrated an antibody-based biosensor using PDA liposomes for detection of hIgE. Target hIgE chemically bound to antibodies-immobilized PDA liposomes and the fluorescence responses were a little bit increased depending on target protein concentration. On the other hand, in case of the addition of Gold nanoparticles-conjugated polyclonal antibody on the liposomes, fluorescent responses dramatically increased depending on target protein concentration. As these results, we could confirm that gold nanoparticles-conjugated polyclonal antibody affect to fluorescent signal amplification of PDA liposomes chip. This strategy can be useful to detect proteins of low concentration.