Ultra-sensitive surface plasmon resonance based immunosensor for prostate specific antigen using gold nanoparticle-antibody complex

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Prostate specific antigen(PSA) is a marker for prostate cancer and it has been identified as a potential marker for breast cancer in women. In order to early diagnose the prostate cancer and the breast cancer, an ultrasensitive diagnostic tool be required. In this study, for the construction of ultrasensitive biosensing device, application of Au nanoparticle-antibody complex is carried out for signal enhancement of SPR. Highly oriented antibody was fabricated on the recombinant Protein G layer. The surface structure of fabricated biosensing element was investigated by using SPR and scanning tunneling microscopy (STM). The plot of SPR angle difference versus PSA concentration shows the achievement of their linear correlation. **Acknowledgements:** This work was supported by the Korea Science and Engineering Foundation(KOSEF) grant funded by the Korea government(MOST) (M1064408000306N440800310) and by the Nano/Bio science & Technology Program (M10536090001-05N3609-00110) of the Ministry of Science and Technology (MOST), and by the Korea Research Foundation Grant funded by the Korean Government(MOEHRD) (KRF-2006-005-J02301).