Enhancement of antibody immobilization in immunoassay by multimer protein G

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This work reports the immobilization of monomer, dimern and trimer protein G onto silica magnetic nanoparticles for self-oriented antibody immobilization. The surface of the silica coated magnetic nanoparticles was modified with 3-aminopropyl-trimethoxysilane (APTMS) to chemically link to multimer protein G. The conjugation of amino groups on the MNPs to cysteine tagged in multimer protein Gs was performed using a sulfo-SMCC coupling procedure. The binding efficiencies of mono-, di- and trimer were 78%, 62% and 54% respectively. However, the highest immobilization of antibody was found from trimer protein G due to improved steric accessibility, resulting to enhancement of sensitivity of immunoassay.