

SPR Immunosensor for the Detection of Staphylococcus aureus

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Abstract : Surface plasmon resonance (SPR) biosensors have emerged as a promising technique for bioanalysis as well as microbial detection and identification. Real time, sensitive, cost effective, and label free detection of biomolecules from complex samples is required for early and accurate diagnosis of infectious diseases. Like many other types of optical techniques, SPR biosensors may also be successfully utilized for microbial detection for accurate, point of care, and rapid results. In the present study, we have utilized a commercially available automated SPR biosensor of BI company to study the microbial detection from water samples spiked with different concentration of Staphylococcus aureus bacterial cells. The gold thin film sensor surface was functionalized to react with proteins such as protein G, which was used for directed immobilization of monoclonal antibodies against Staphylococcus aureus. The results of our work reveal that this immunosensor can be used to detect very small number of bacterial cells with higher sensitivity and specificity. In our case 10^3 cells/ml of water have been successfully detected. Therefore, it may be concluded that this technique has a strong potential to be used in microbial detection and identification.

Keywords : surface plasmon resonance (SPR), Staphylococcus aureus, biosensors, microbial detection

Conference Title : ICBB 2014 : International Conference on Biosensors and Bioelectronics

Conference Location : Rome, Italy

Conference Dates : September 18-19, 2014