Sensitive and fast detection of HIV type1 using the protein nanoparticles

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Human immunodeficiency virus(HIV) is a lentivirus that causes acquired immunodeficiency syndrome (AIDS), a condition in humans in which progressive failure of the immune system allows life-threatening opportunistic infections and cancers to thrive. Many HIV-positive people are unaware that they are infected with the virus. In the early stage of infection, infected people have just signs of physical fatigue such as fever, swollen lymph nodes, sore throat, rash, muscle pain, malaise, and mouth and esophageal sores. And The disease has a long incubation period. For these reasons, HIV spreads very rapidly and widely. Ealry stage detection of HIV is very important issue to prevent spreading HIV and to improve the quality of our life. In our research, epitopic region which is attacked by HIV specific antibody was expressed with the protein nano particles (PNPs) in the Escherichia coli. The expression of recombinant gene that encodes the recombinant PNPs fused with epitopic region produced self-assembled protein nano particle. Fusion expression of PNPs and epitopic region is the powerful detection method of HIV. Using the commercial antibodies, we identified that functional PNPs improve sensitivity.