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<th>ID: 6812</th>
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<td>Congress: 1st Tabriz International Life Science Conference and 12th Iran Biophysical Chemistry Conference</td>
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<td>Title: A new luminescence method for Hepatitis B virus detection based on gold nanoparticles</td>
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<td>Authors: Mostafa Shourian, Hedayatollah Ghourchian</td>
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Abstract: 

**Introduction:** Immunosensor is one of the specific detection methods in antigen diagnosis. It benefits from high affinity of antigen-antibody interaction. The sensitive luminescence immunoassay method based on antibody, luminol and gold nanoparticles with HAuCl₄ as catalyst were selected for the detection of Hepatitis B virus. So, the designed immune-sensors can improve the parameter in amplification of the signal by using gold nanoparticles (GNPs) to exhibit remarkable optical properties.

**Method:** In sandwich type of immunoassay method, the primary antibody immobilized in polystyrene and using the secondary antibody conjugated to streptavidin, the modified antibodies combined with antigen to form a sandwiched immune reaction that was monitored by luminescence detection. For this purpose, GNPs were modified by biotin and luminol that can attach to streptavidin.

**Results:** The complex amplified the luminescent signal. The luminescent intensity was proportional to the concentration of the antigen in sample. Catalyst comparison proved that the HAuCl₄ is the best catalyst for this type of detections. After optimizing assay conditions, calibration shows the detection limit of the antigen in this immunosensors was 2 pico gr/ml. Some parameters such as the immunoassay parameters, gold amplification parameters and analytical performance could affect on luminescent signal production. In the amplification parameters, AuNPs produce localized surface plasmons, which influence nearby luminophores and an enhancement in their luminescence intensity.

**Conclusions:** The detection limit of the method is lower than that produced
either by the widely used enzyme-linked immunosorbent assay or by the clinical routine chemiluminescence immunoassay. </span></p>
Amplification of luminescence signal, Gold nanoparticles, immunoassay

Presentation: Poster