Title: Luminal and antibody bearing gold nanoparticles as a bio-label for detection of hepatitis B surface antigen

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Abstract: 

**Introduction:** Fast detection of hepatitis B virus plays a crucial role in diagnosis and treatment of the disease.

**Method:** By co-immobilization of anti-hepatitis B surface antigen (anti-HBs-Ag) antibody and luminol on gold nanoparticles (GNPs), a chemiluminescence based immunosensor was developed for the detection of HBs-Ag. In a sandwich type immunoassay method, anti-HBs-Ag was immobilized in polystyrene wells and used as primary antibody and the secondary antibody conjugated to luminol coated GNP as label, then, HBs-Ag was conjugated between primary and secondary antibodies.

**Results:** Using hydrogen peroxide as oxidant agent and HAuCl4 as catalyst, the chemiluminescent intensity was proportional to the concentration of HBs-Ag in sample. Applying different catalyst showed that HAuCl4 is the most efficient catalyst for this type of detections.

**Conclusions:** The immunosensor responded toward HBs-Ag in a wide linear range of 0.125 to 30 ng/ml. The proposed method has successfully applied to determine the HBs-Ag in patient serums.