Supplementary information

Rapid visual detection of *Mycobacterium tuberculosis* DNA using gold nano-particles

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Synthesis and characterization of two different sizes of gold nanoparticles:

Three types gold nanoparticles (GNPs)were synthesized by changing the amount of sodium citrate salt using citrate-mediated reduction of gold(III)chloride ($HAuCl_4$) [16]. Briefly, three flasks of each 50 mL of 1milimolar (mM) $HAuCl_4$ solution were taken and kept for boiling on hot plate. 5mL of 25 mM, 38 mM and 45 mM of tri-sodium citrate dihydrate solution were added to separate flasks containing $HAuCl_4$ solution. After 20 min, the colour of the reaction mixture changed from light yellow to pink and then to wine red, indicating the formation of GNPs. The resulting suspension was maintained at 28ºC for cooling.TEM image analysis all three GNPs gave average diameter of 10, 18 and 22 nm respectively. Particles have the mean diameter of 18 nm was used for further investigations.

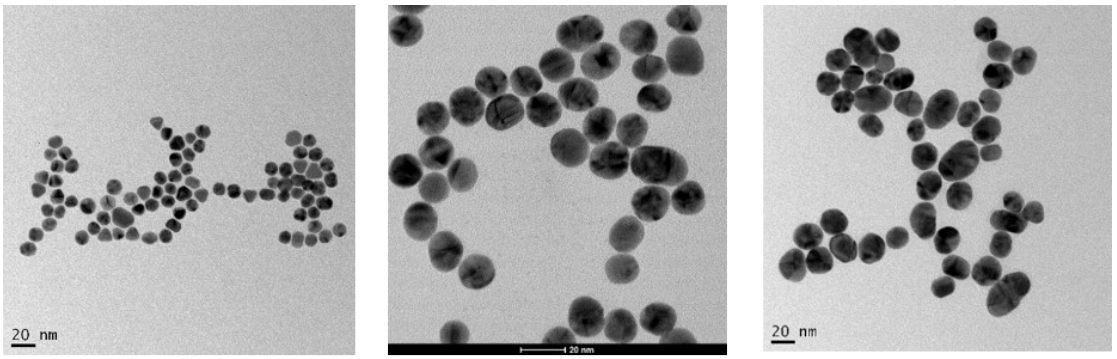

Figure S1: TEM images of gold nanoparticles. (a)GNPs having the average diameter of 10nm (b) GNPs having the average diameter of 18nm (c) GNPs having the average diameter of 22 nm, as measured via TEM analysis.

Colorimetric detection of TB DNA using other two gold nanoparticles

Colorimetric assay for TB DNA was performed using GNPs having the average diameter of 10 nm and 22 nm. After PCR amplification, 2.5 µL of the PCR product with and without TB DNA were taken in separate tubes. 10 uL of each GNP (10 nm and 22 nm) were added separately to these tubes, followed by the addition of 5 uL of 100% ethanol. Colour change was observed after 3-5 min.

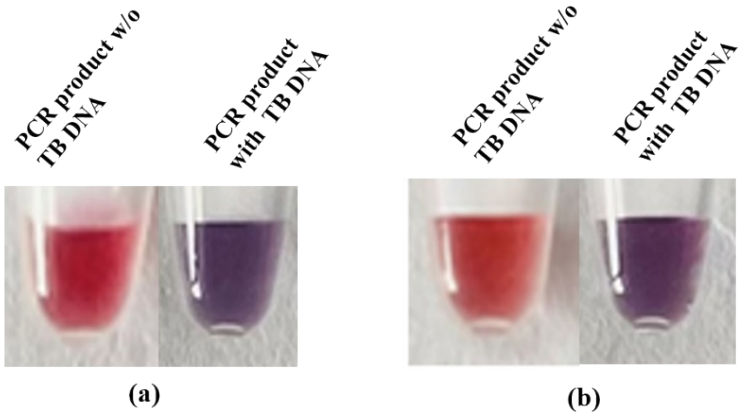

Figure S2: Colorimetric detection of TB DNA using GNPs. Figure (a) Colorimetric detection using GNPs having the average diameter of 10 nm. (b) Colorimetric detection using GNPs having the average diameter of 22 nm.