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SUPPORTING INFORMATION

Unveiling the effect of 11-MUA coating on biocompatibility and catalytic activity of Gold-core Cerium oxide-shell-based nanozyme

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Experimental Methods:

XRD analysis of CTAB coated CSNPs and 11-MUA coated AuNPs:

X-ray diffraction (XRD) was done using Bruker D4 Endeavor diffractometer equipped with Cu-Kα radiation source and operated at 40 kV and 35 mA. The aqueous samples were drop casted on glass slide and after complete dryness, the samples were scanned for XRD pattern.

Temperature and pH depended peroxidase-like activity:

In a typical experiment, 1 mM TMB was used as chromogenic substrate to measure peroxidase-like activity of the different concentration of CTAB coated CSNPs, CTAB coated CeO_2NPs, CTAB coated AuNPs and 11-MUA coated AuNPs. Addition of H_2O_2 (2 M) converted reduced TMB to oxidized TMB product which was blue coloured product. The peroxidase-like activity was buffered with citrate buffer at pH- 4.0 and initiated at 37 ˚C. The total reaction volume was 500 µL. The effect of temperature and pH on peroxidase-like activity NPs were carried using 25 µg/mL of CTAB coated CSNPs and 11-MUA coated AuNPs , 1 mM TMB and 2 M H_2O_2 in 0.1 M citrate buffer (pH-4.0). For pH dependent study, CTAB coated CSNPs and 11-MUA coated AuNPs were incubated overnight at different pH (range 2–12) and the temperature was maintained at 37° C. For temperature studies, the reaction was carried a wide range of temperature (20–90 °C) at pH 4.0. The evolution of absorbance of oxidised TMB at 652 nm was followed for about 20 minutes.

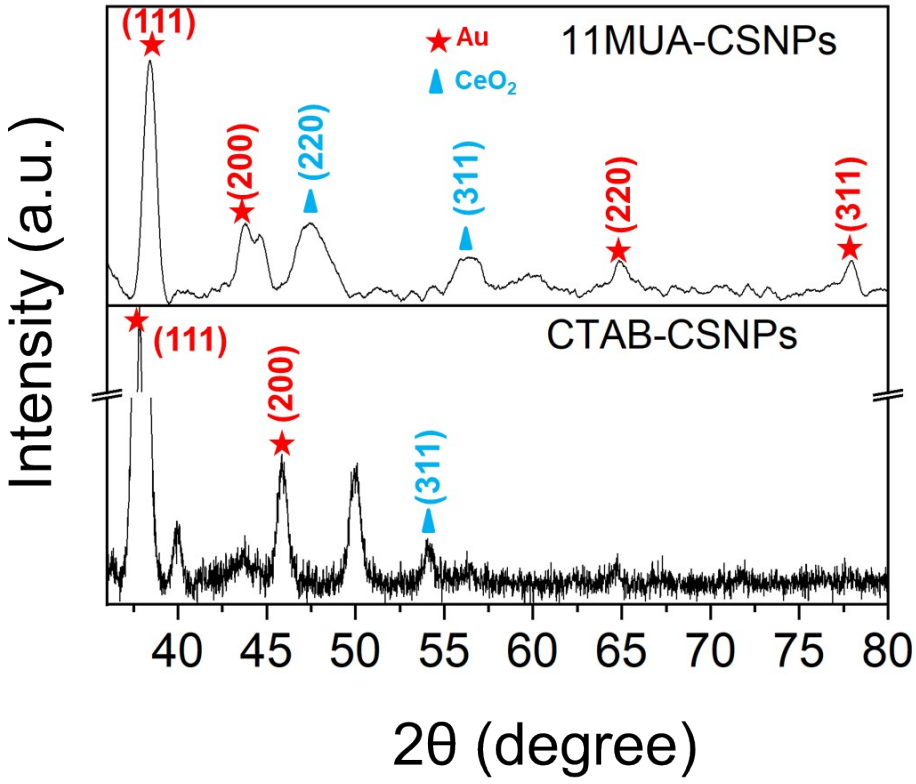

Figure S1: *XRD analysis of CTAB coated CSNPs and 11-MUA coated AuNPs. 2theta value for CTAB coated CSNPs for Au was 33.8 (111) and 54.2 (200) for CeO_2 was 45.7(311). 2 theta value for 11-MUA coated CSNPs for Au was 38.7 (111), 44.7 (200), 64.7 (220) and 76.6 (311), for CeO2 46.8 (220) and 57.5 (311).*

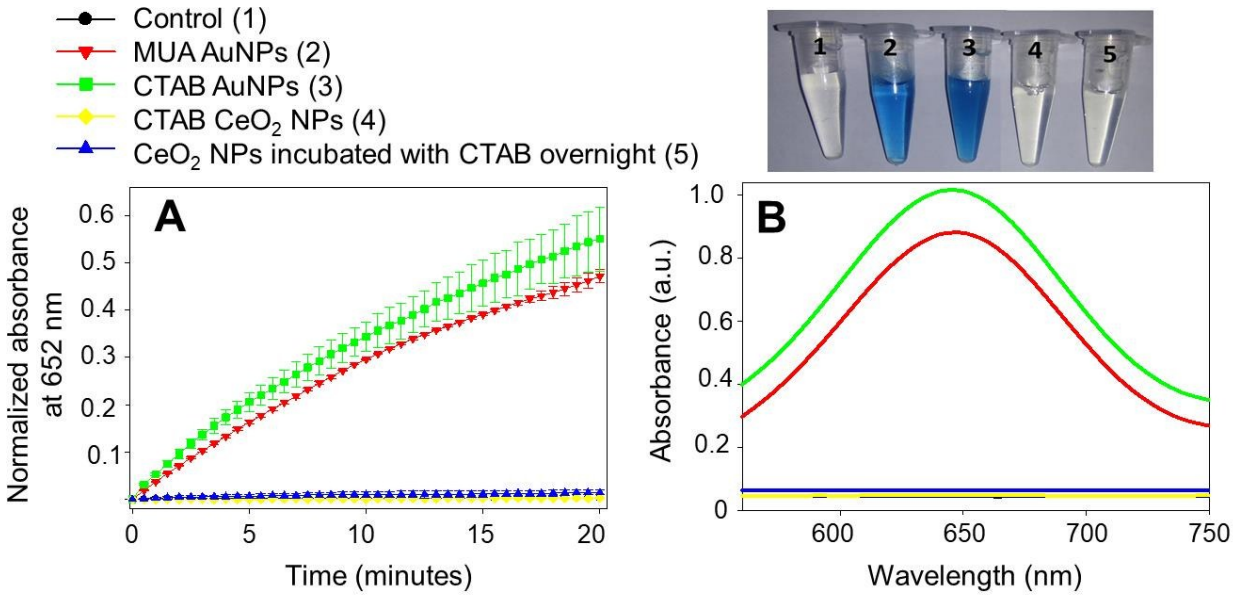

Figure S2: *Peroxidase-like activity was measured by using UV-Vis Spectrophotometer for CTAB coated CSNPs, 11-MUA coated AuNPs and CTAB coated CeO_2 NPs (A). Inset tubes represent color intensity of TMB in presence of H_2O_2. Tube 1 contains TMB + H_2O_2. Tube 2 & 3 contain CTAB coated CSNPs and 11-MUA coated AuNPs, respectively. Tube 4 and 5 contain CTAB coated CeO_2 NPs and CeO_2 NPs incubated overnight with CTAB respectively. The peroxidase reaction of CTAB coated CSNPs, 11- MUA coated AuNPs and CTAB coated CeO_2 NPs was followed by recording the change in absorbance of oxidized TMB at 652 nm (B). Data expressed as standard deviation calculated from 3 experiments.*

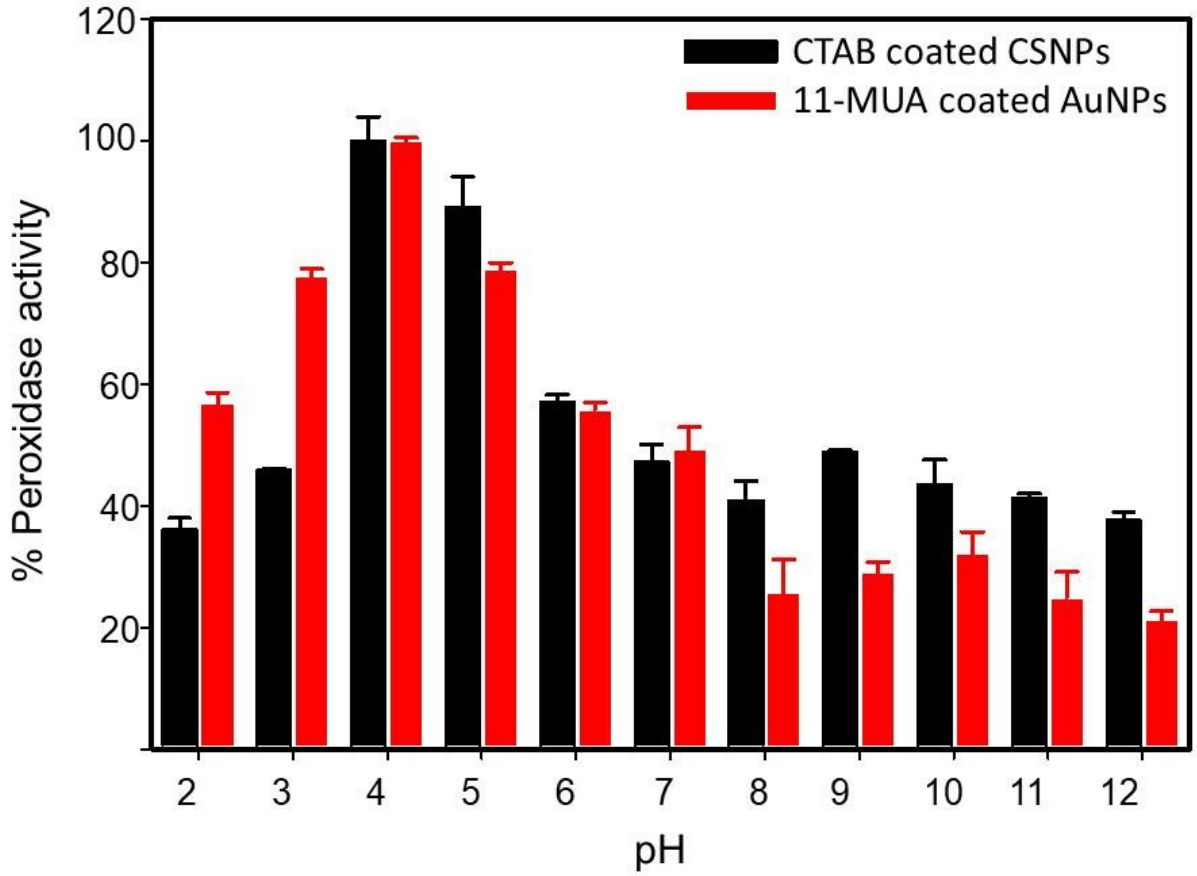

Figure S3: *Peroxidase-like activity at different pH was measured by using UV-Vis Spectrophotometer for CTAB coated CSNPs and 11-MUA coated AuNPs. The changes in enzyme mimetic activity were followed by recording absorbance of TMB at 652 nm. Rest of the reaction conditions were kept same. The highest activity was considered as 100%. Data expressed as standard deviation calculated from 3 independent experiments.*

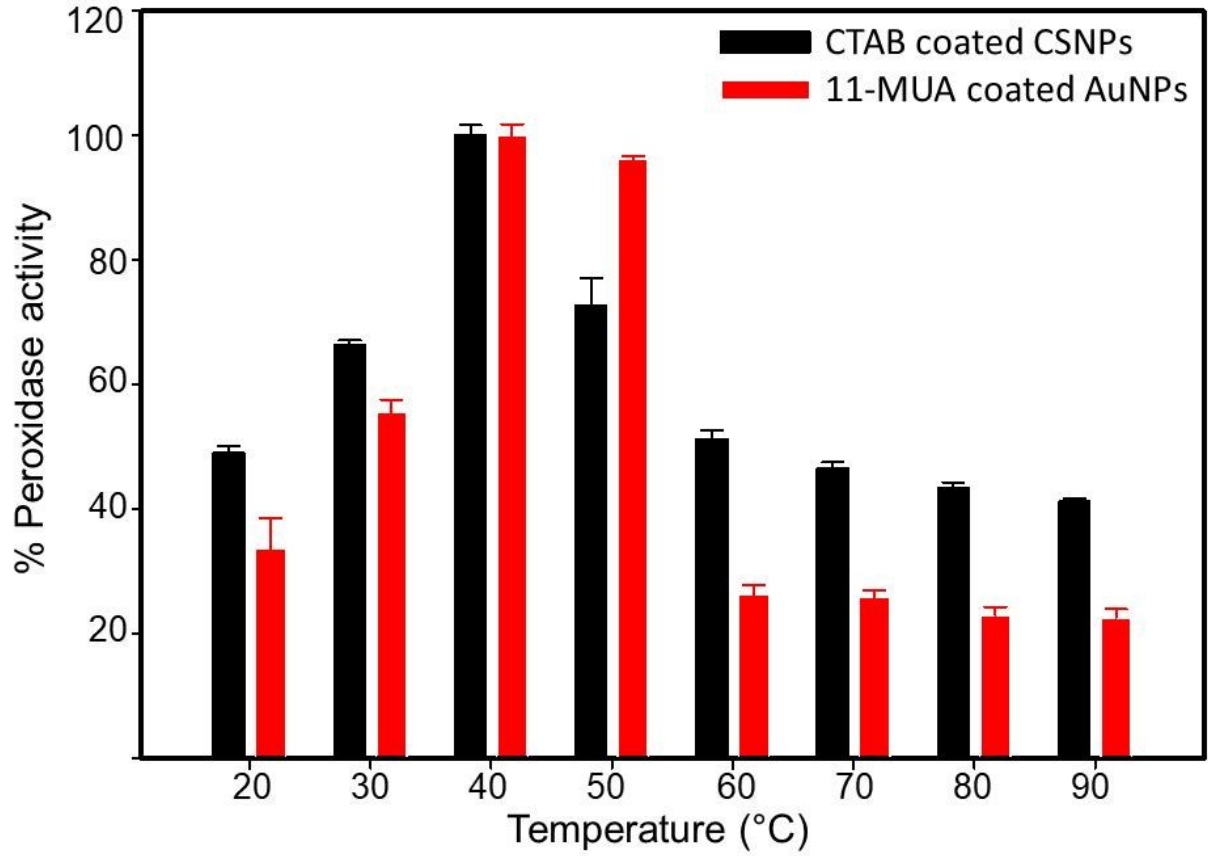

Figure S4: *Peroxidase-like activity at different temperatures was measured by using UV-Vis Spectrophotometer for CTAB coated CSNPs and 11-MUA coated AuNPs. The changes in enzyme mimetic activity were followed by recording absorbance of TMB at 652 nm. The highest activity was considered as 100%. Rest of the reaction conditions were kept same. Data expressed as standard deviation calculated from 3 independent experiments.*