## Supplementary Information

# Ligand-to-Metal Ratio Governs Radical-Scavenging Ability of Malate-Stabilised Ceria Nanoparticles

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**Table S1.** ζ-potential of the nanoparticles at various ligand:$CeO_2$ molar ratios.

| **ligand:$CeO_2$** | **pH** | **ζ-potential, mV** |
|---|---|---|
| 1:1 | 7.4 | −16±1 |
| 0.8:1 | 7.4 | −17±1 |
| 0.6:1 | 7.5 | −16±1 |
| 0.5:1 | 7.4 | −17±1 |
| 0.4:1 | 7.5 | −17±1 |
| 0.2:1 | 7.5 | −13±1 |
| 0.1:1 | 7.6 | –7±2 |
| 0:1 | 2.0 | +18±1 |

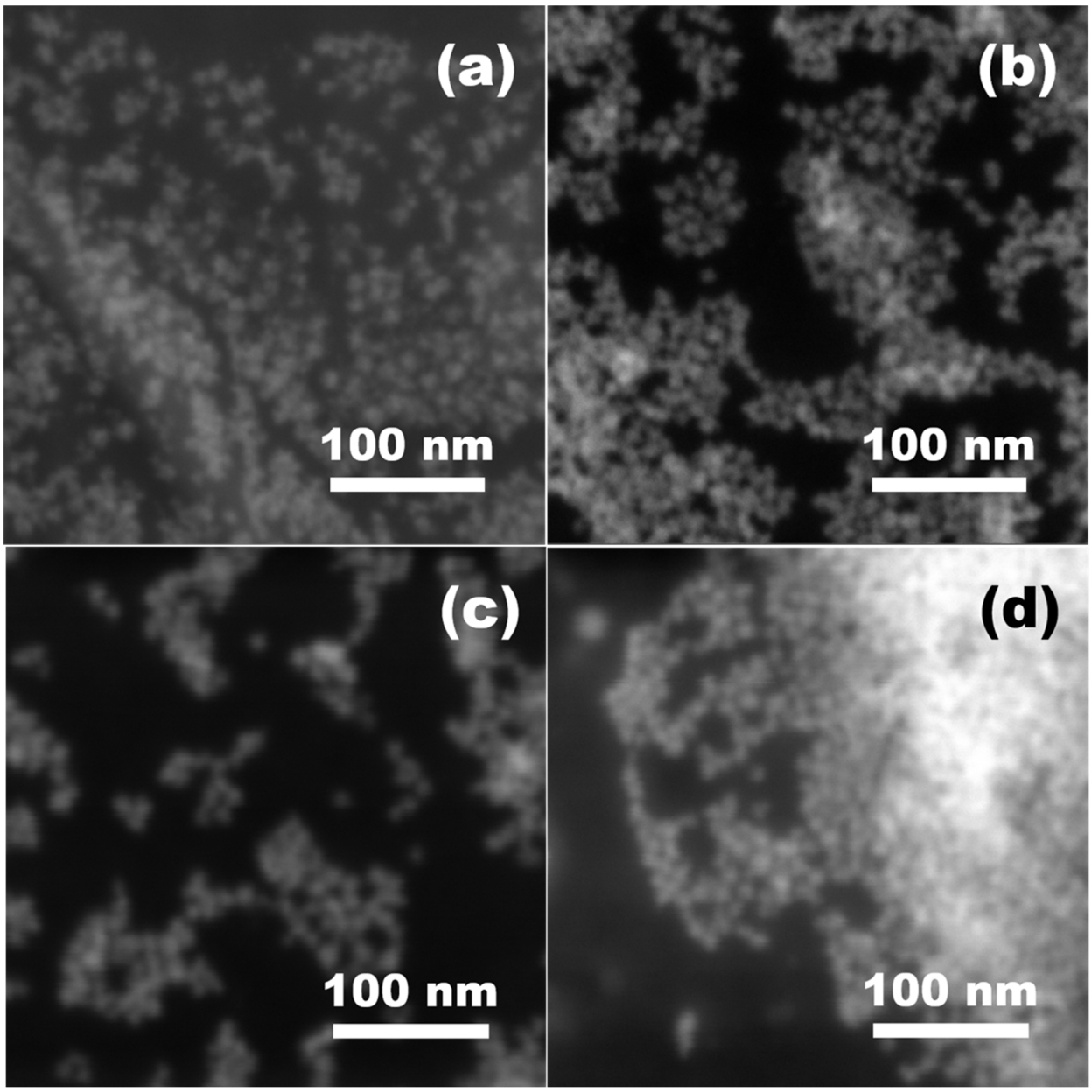



**Figure S1.** STEM images of $CeO_2$ powders obtained by drying ceria sols stabilised with L-malic acid at molar ratios ligand:$CeO_2$: 0:1 (**a**), 0.2:1 (**b**), 0.4:1 (**c**) and 1:1 (**d**).

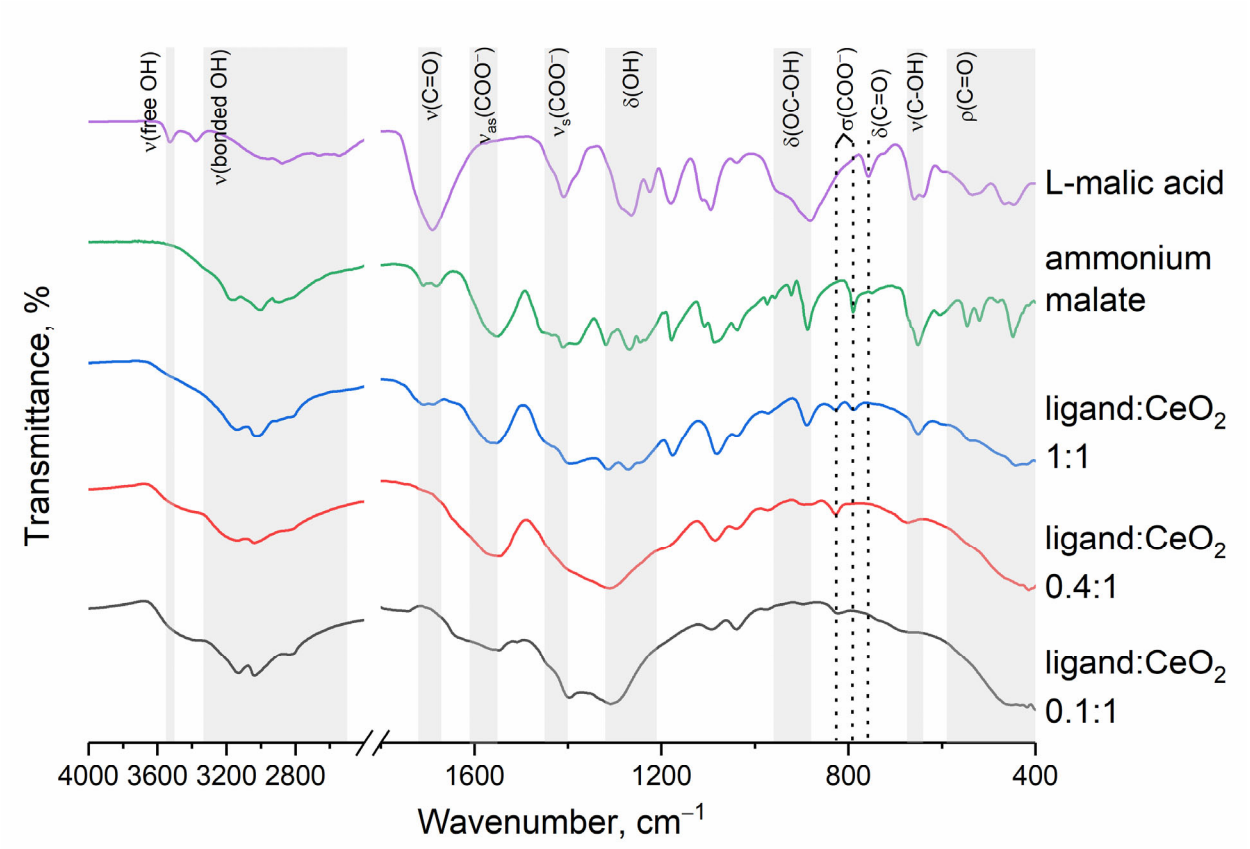



**Figure S2.** FTIR spectra of malate-stabilised ceria samples (molar ligand:$CeO_2$ ratios are provided), L-malic acid and monosubstituted ammonium malate.

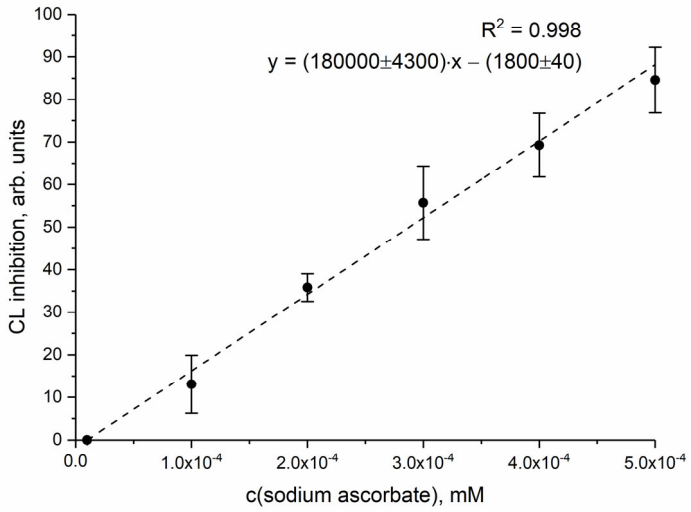



**Figure S3.** Dependence of the antioxidant activity of sodium ascorbate on its concentration.

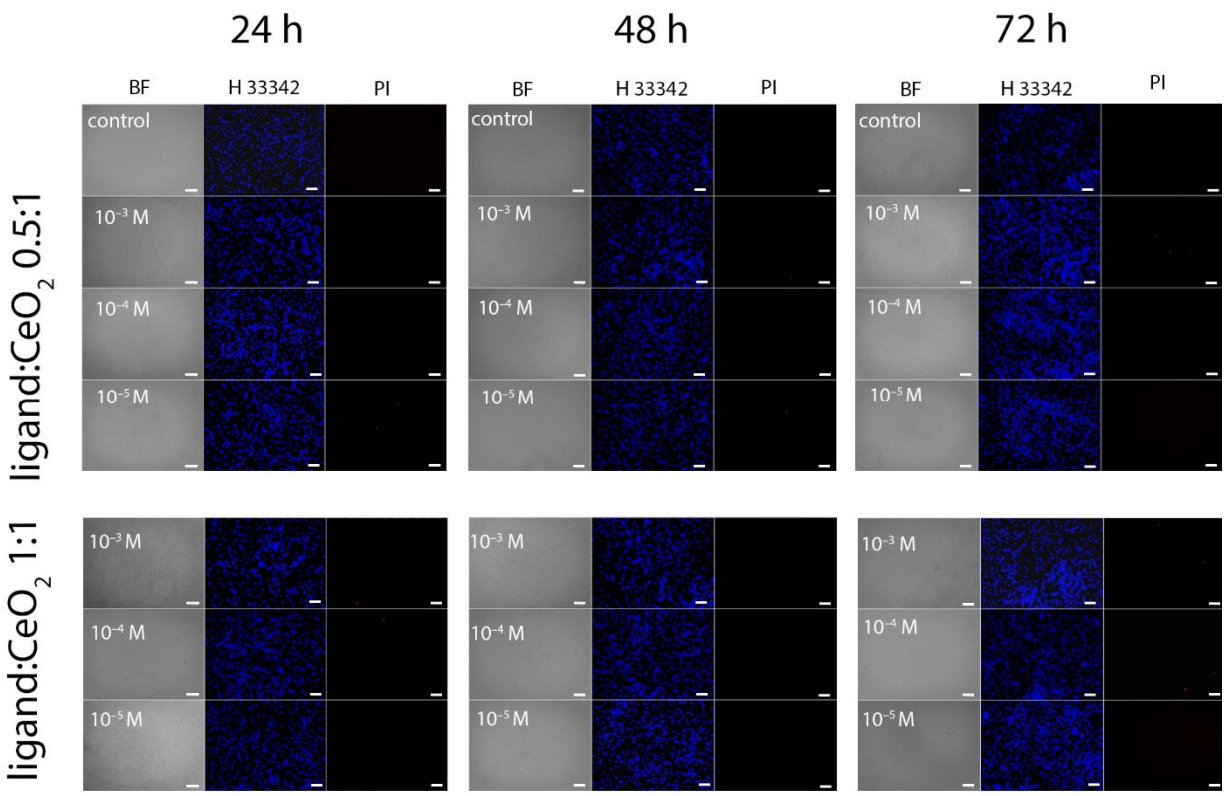



**Figure S4.** Live/Dead assay for the human MSCs after 24, 48 and 72 h of cultivation with different concentrations of malate-stabilised $CeO_2$ nanoparticles with various ligand-to-metal ratios.