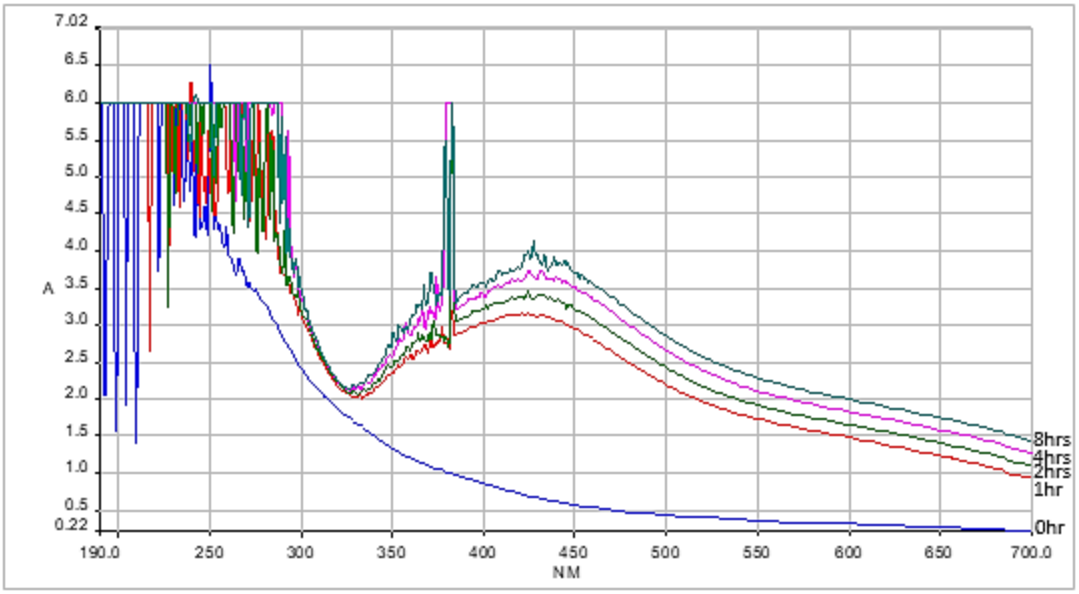
Supplementary Material: Nanoparticle Characterization

The synthesized *Moringa oleifera* silver nanoparticles (MO-AgNPs) were thoroughly characterized to confirm their physicochemical properties before to their use in biological assays. Key parameters such as particle size distribution (via dynamic light scattering, DLS), zeta potential, and optical properties (using UV-Vis spectroscopy) were initially assessed. However, as the DLS and zeta potential data have been previously published [7], the UV–Vis spectroscopy data are included in the supplementary materials. These analyses verified the stability and surface charge of the nanoparticles, ensuring their suitability for subsequent biological evaluations including invasion, tube formation, co-culture spheroid, and rat aortic ring assays. Detailed characterization data are presented in Supplementary Figures 1.

Analysis and Characterisation of MO-AgNPs

UV-Vis absorbance spectrum of MO-AgNPs

UV-visible spectroscopy is widely used to analyze the optical properties of materials, including transparency, band gap, absorption, and reflectance in the UV and adjacent visible spectral regions (around 430 nm). The absorption spectra of MO-AgNPs synthesized over 1, 2, 4, and 8 hours were recorded. Automatic zero calibration was performed using a blank before sample measurement, and the absorption bands were generated using UV-Vis WinLab software version 2.85. Water was used as the solvent for sample dissolution, as recommended. As shown in Figure 1, UV–Vis spectrophotometry confirmed the successful synthesis of MO-AgNPs, demonstrated by a characteristic surface plasmon resonance (SPR) absorption peak centered around 430 nm.



Supplementary Figure 1. UV-Vis spectrometry of MO-AgNPs with a distinct band at 430 nm. The impact of incubation time on MO-AgNPs formation was analyzed using UV-Vis spectrometry.