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Supplementary Materials

Antitumor Effects of Melittin-Functionalized Fe_3O_4 Magnetic Nanoparticles in Collagen-I-Based Caco-2/BJ/HUVEC Spheroids Enhanced by Magnetic Hyperthermia

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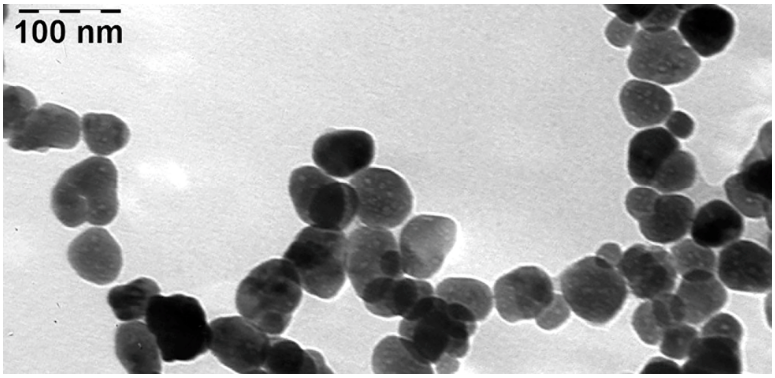


Figure S1. Representative TEM image of MNPs-Mel.

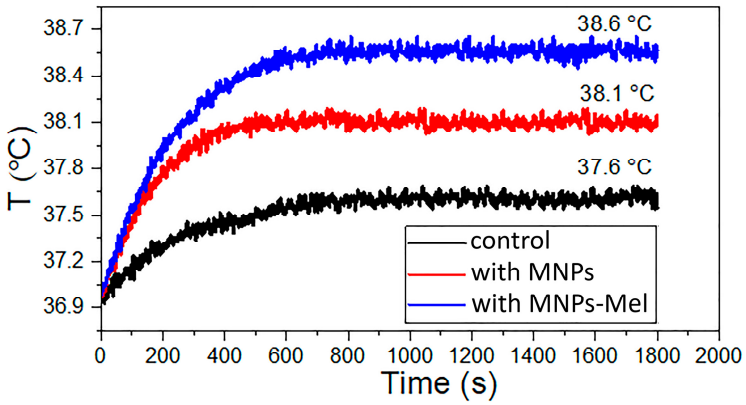


Figure S2. Heating curves during spheroids exposure to MH. The temperature was monitored using the fiber-optic temperature probe incorporated within the MH system, with a resolution of 0.1 °C. The probe was positioned in proximity to the spheroids containing matrices (n = 3).

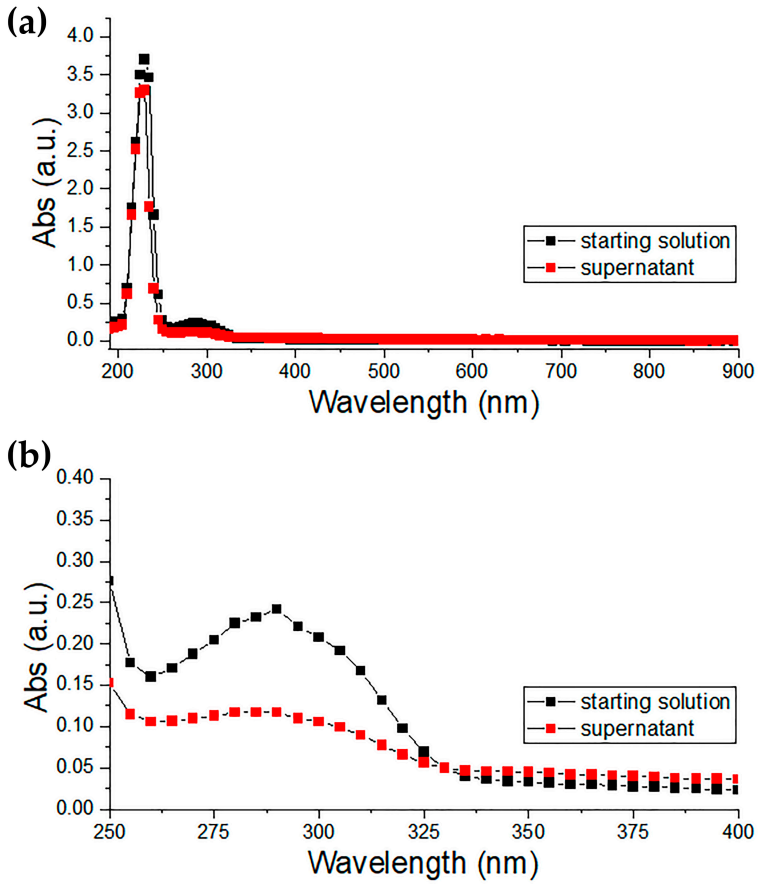


Figure S3. UV-Vis spectra of starting solution and supernatant upon attachment Mel procedure: Raw spectra (a) and Zoom-in UV-Vis spectra to highlight the peak at 280 nm (b).

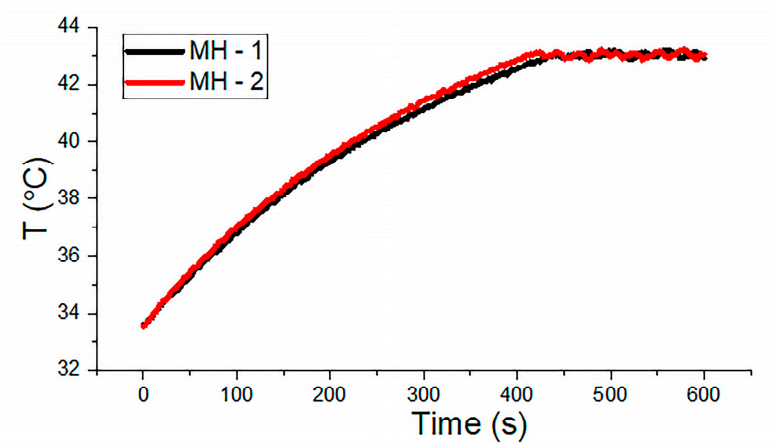


Figure S4. Heating curves of two samples of MNPs-Mel (0.5 mg/mL) during MH exposure (25kA/m, 355 kHz).

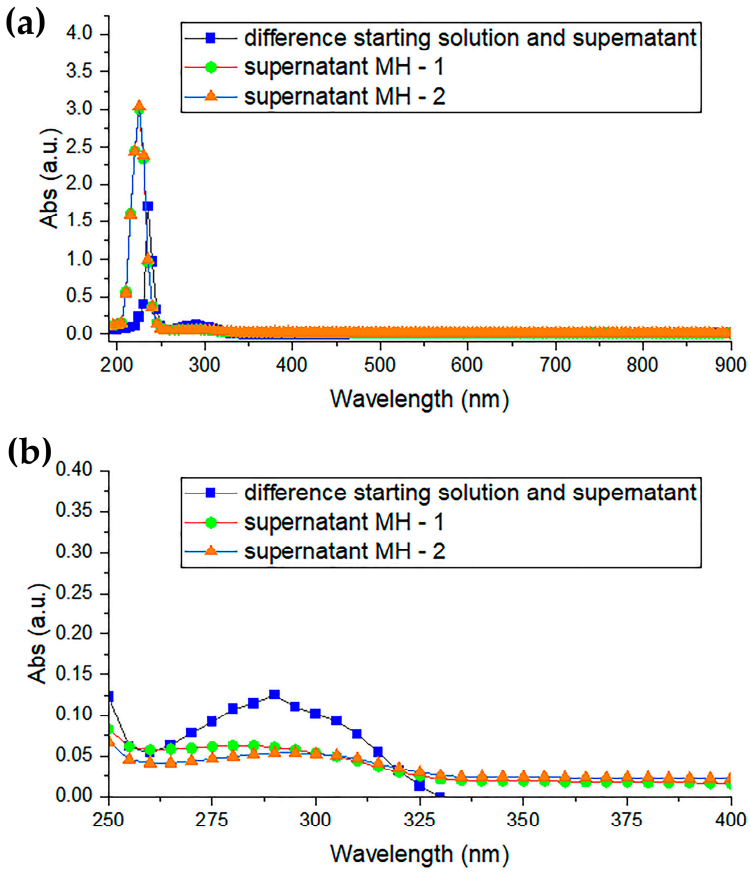


Figure S5. UV-Vis spectra as difference between starting solution and supernatant upon attachment Mel procedure and supernatant solutions upon MH exposure. Raw spectra (a) and Zoom-in UV-Vis spectra to highlight the peak at 280 nm (b).

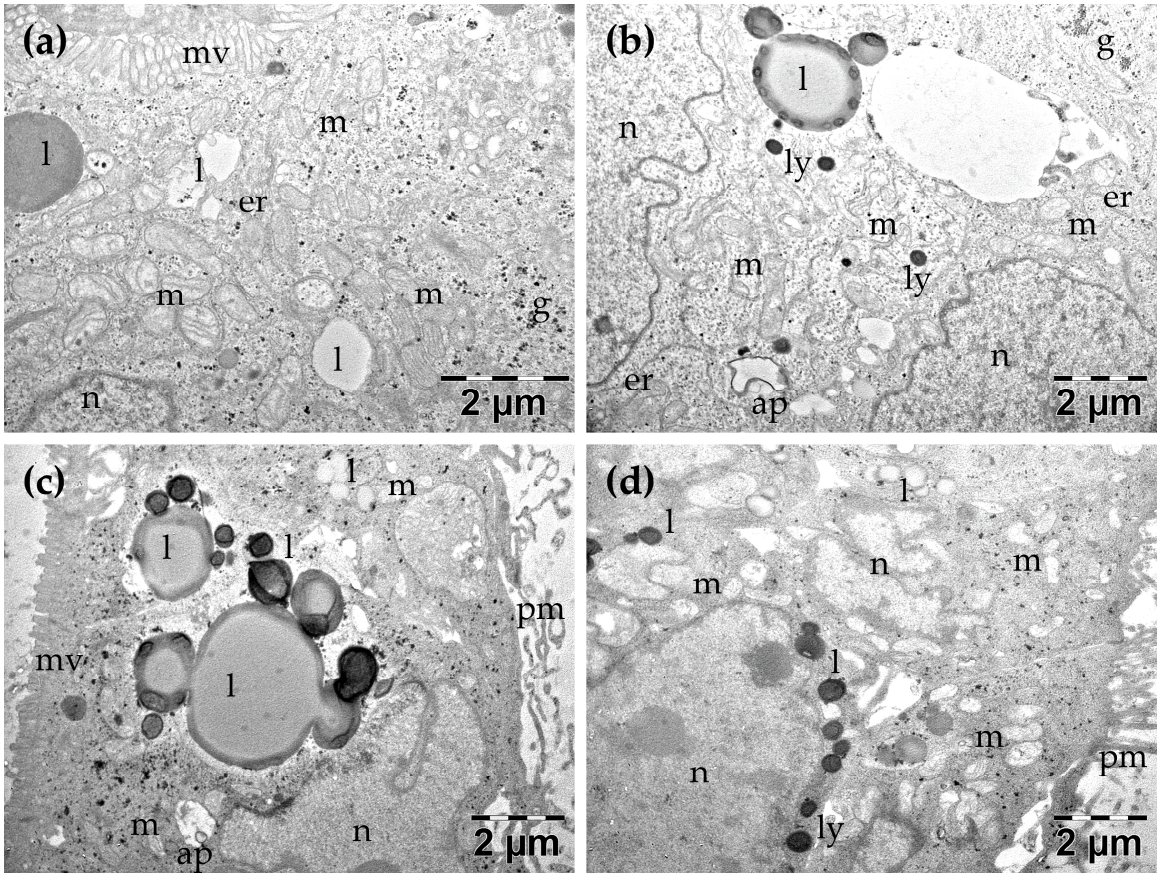


Figure S6. Representative TEM images of cells in spheroids from control groups exposed to AMF for 24 h (a,b) or 72 h (c,d). ap: autophagosome; er: endoplasmic reticulum; g: glycogen; l: lipid droplets; ly: lysosomes; m: mitochondria; mv: microvilli; n: nucleus; pm: plasma membrane.

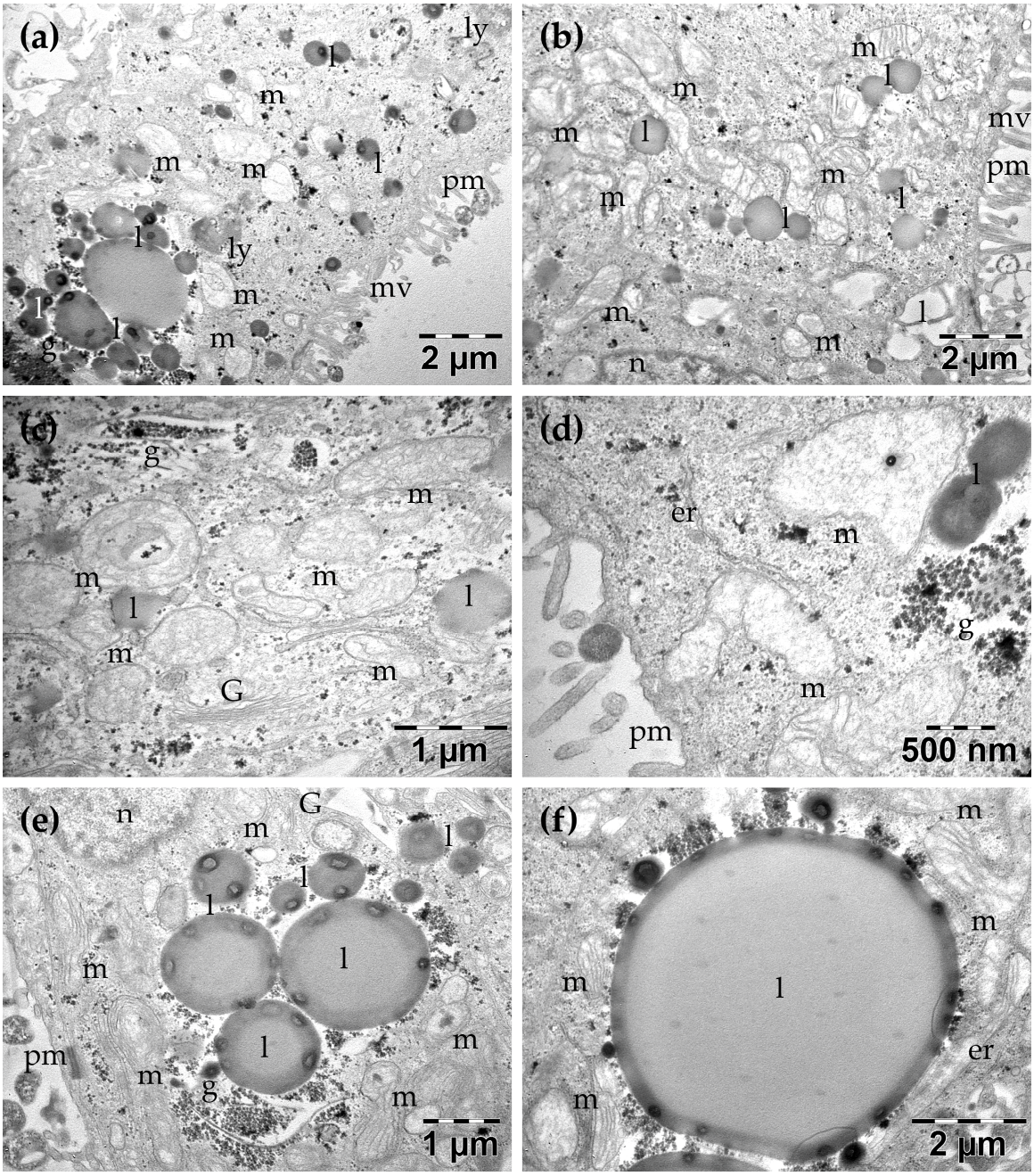


Figure S7. (a–f) Representative TEM images of cells in spheroids from Mel 24 h group. er: endoplasmic reticulum; G: Golgi apparatus; g: glycogen; l: lipid droplets; ly: lysosome; m: mitochondria; mv: microvilli; n: nucleus; pm: plasma membrane.

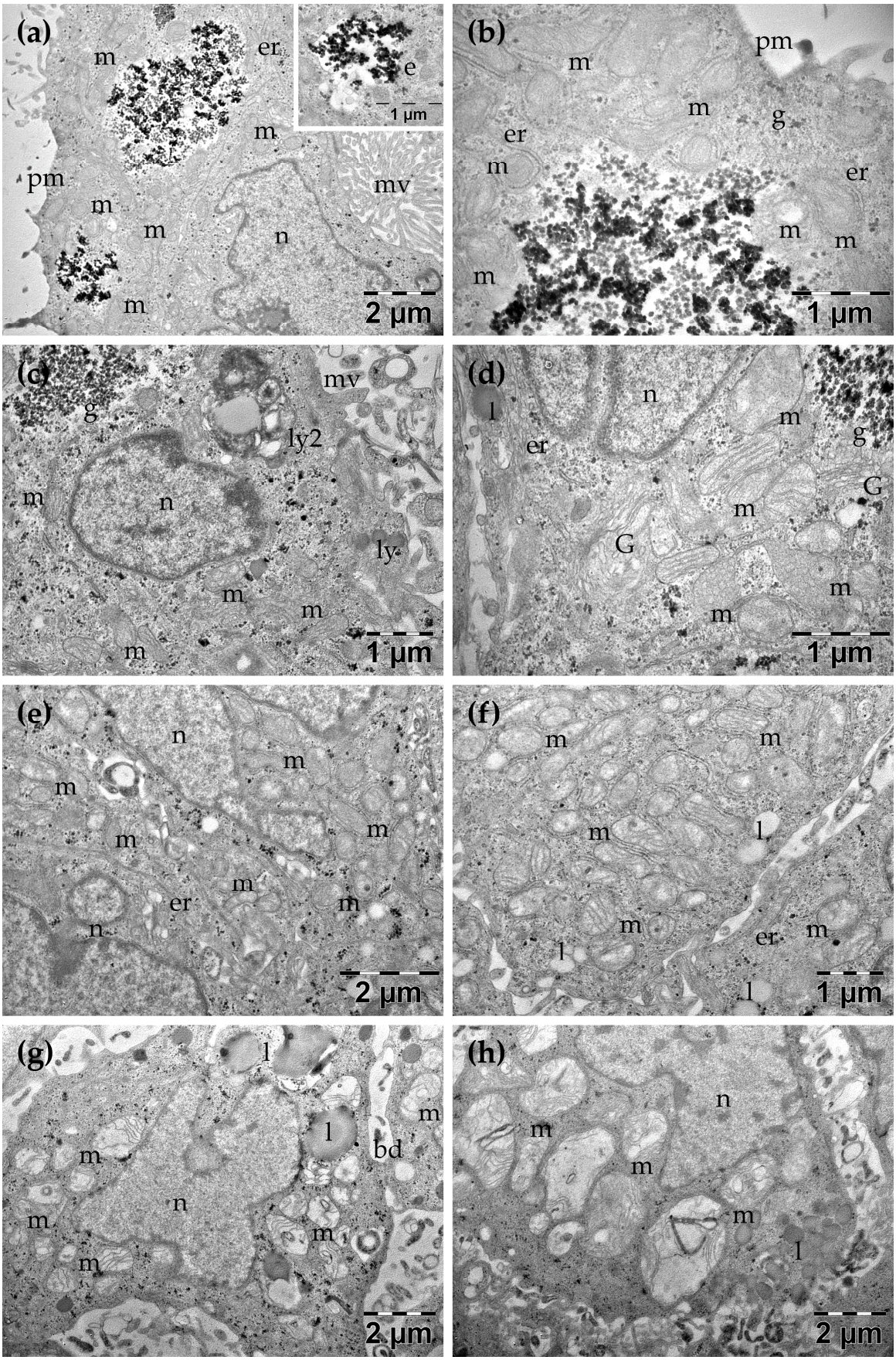


Figure S8. Representative TEM images of cells in spheroids from MNPs 24 h (a,b), MNPs-MH 24 h (c,d), MNPs 72 h (e,f) and MNPs-MH 72 h (g,h) groups. e: endosome; er: endoplasmic reticulum; G: Golgi apparatus; g: glycogen; l: lipid droplets; ly: lysosome; ly2: secondary lysosome; m: mitochondria; mv: microvilli; n: nucleus; pm: plasma membrane.

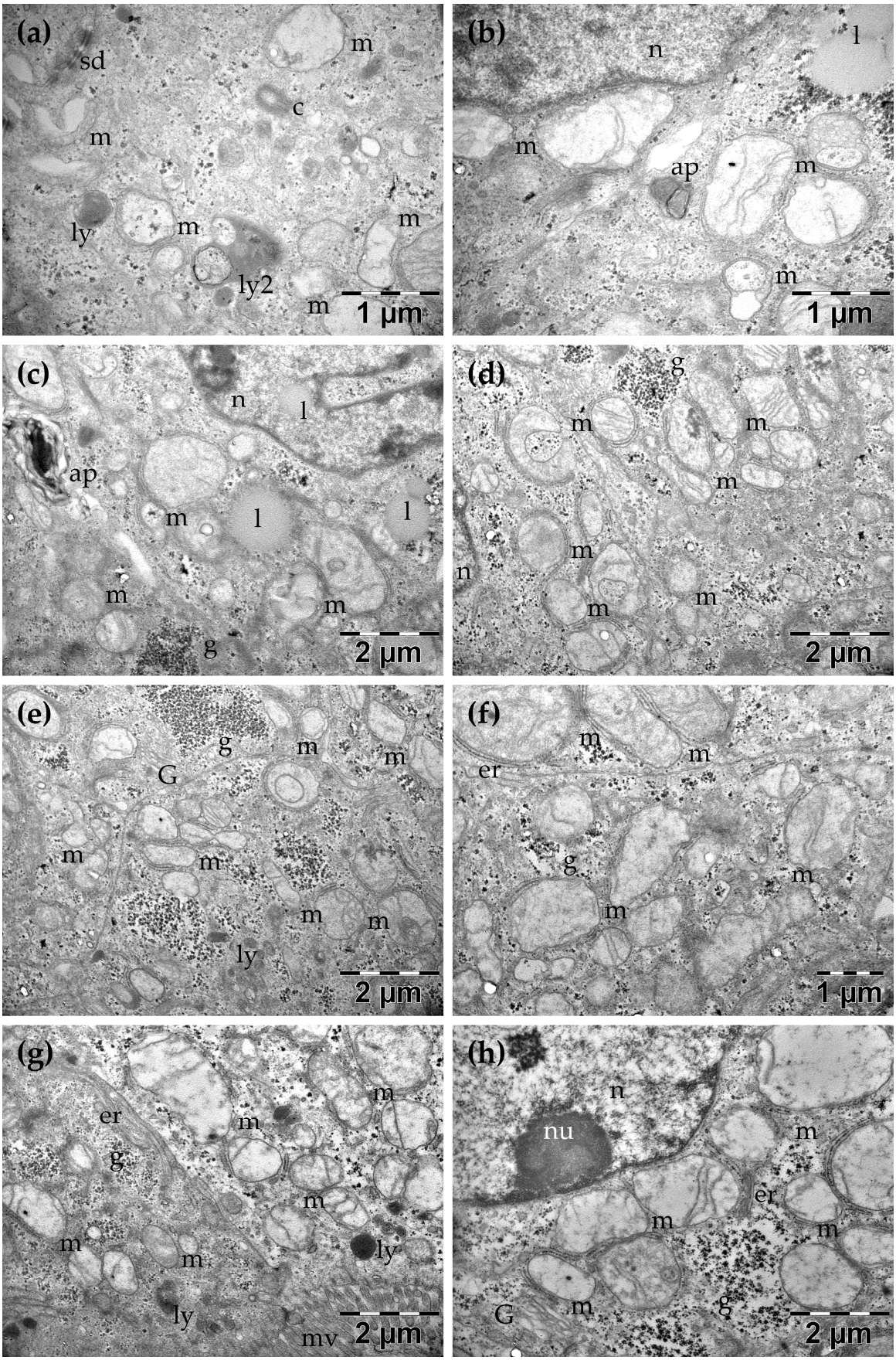


Figure S9. (a–h) Representative TEM images of cells in spheroids from MNPs-Mel 24 h group. ap: autophagosome; c: centriole; er: endoplasmic reticulum; G: Golgi apparatus; g: glycogen; l: lipid droplets; ly: lysosome; m: mitochondria; mv: microvilli; n: nucleus; nu: nucleolus; sd: spot desmosomes.

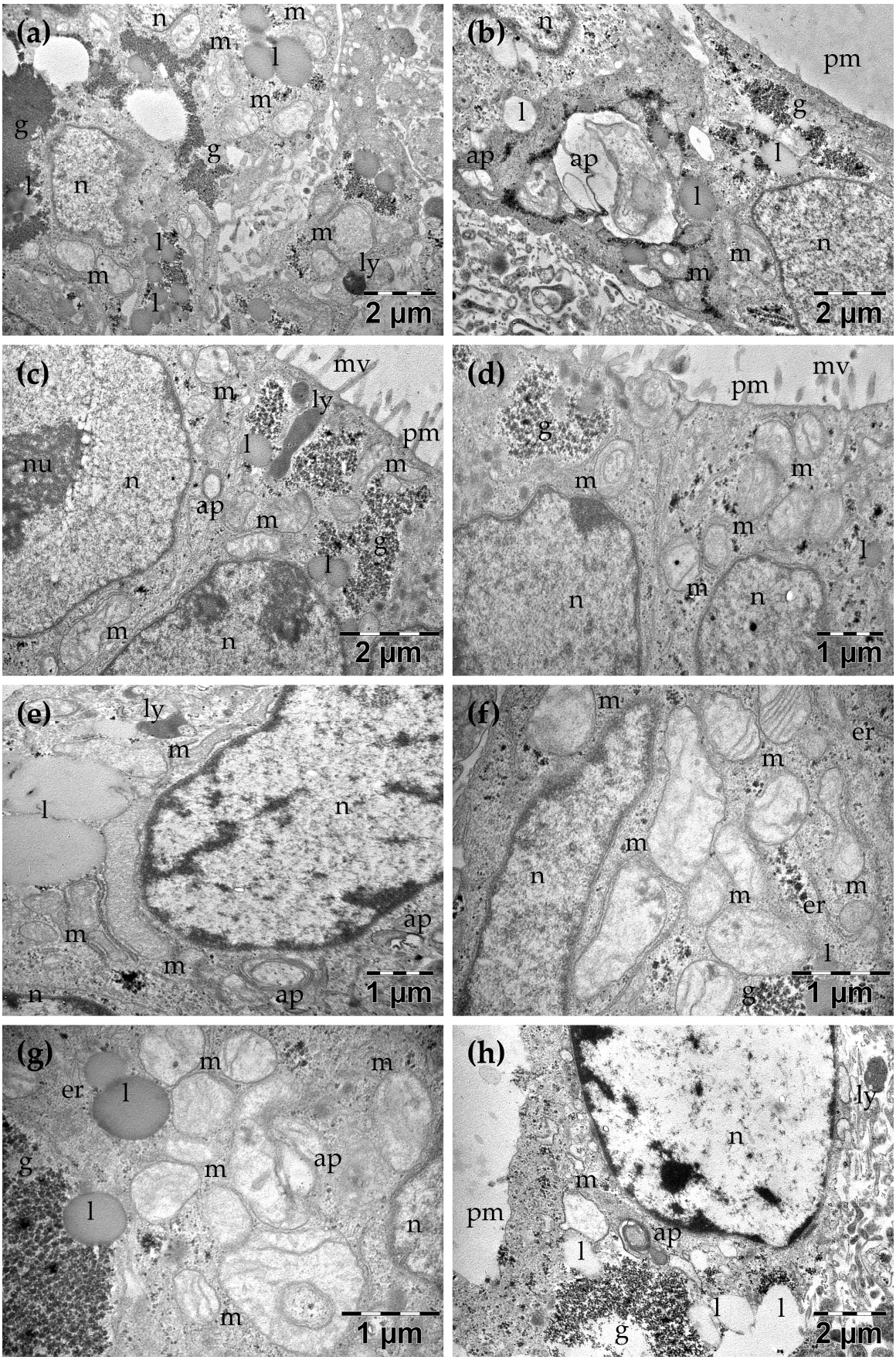


Figure S10. (a–h) Representative TEM images of cells in spheroids from MNPs-Mel-MH 24 h group. ap: autophagosome; er: endoplasmic reticulum; g: glycogen; l: lipid droplets; ly: lysosome; m: mitochondria; mv: microvilli; n: nucleus; nu: nucleolus; pm: plasma membrane.