

Supporting Information

Melatonin-loaded mesoporous zinc, and gallium-doped hydroxyapatite nanoparticles to control infection and bone repair

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Table S1. The list of gene sequences of the primers

Gene Name	Reverse Primer (5'–3')	Forward Primer (5'–3')
ALP	TGGAGACACCCATCCCATCT	TGGAGCTTCAGAAGCTCAACAC
Runx-2	GGTGTGGTAGTGAGTGGTGG	TAGGCGCATTTCAGGTGCTT
COL I	ACCAGACATGCCTCTTGCCTT	CCTGCGTGTACCCCACTCA
OCN	TATATCCACTGCCTGAGCGG	GGCAGCCTCTGATTGTGTCC
GAPDH	TGATGGGTTTCCCATGATGA	TGATTCTACCCACGGCAAGTT

ALP: alkaline phosphatase, RUNX2: runt-related transcription factor 2, Col I: type I collagen, OCN: osteocalcin

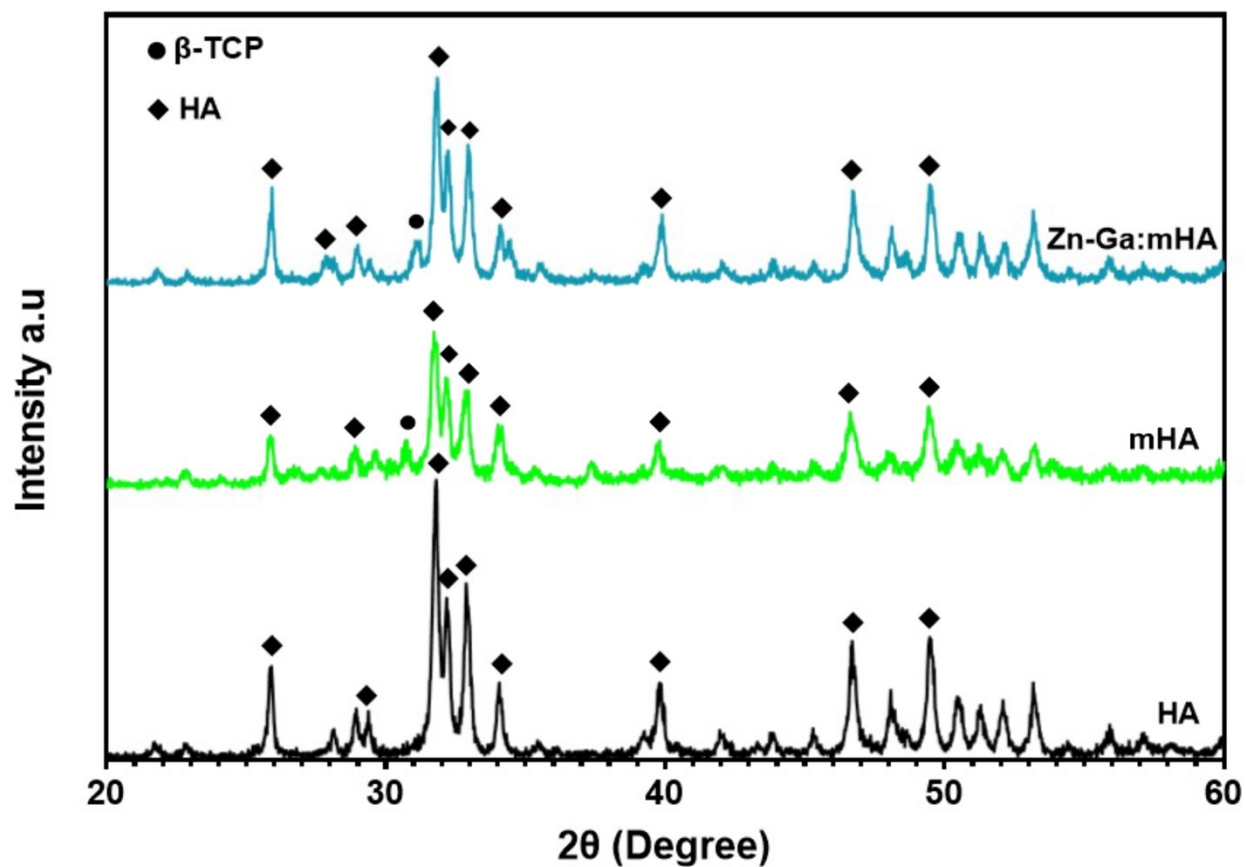


Figure S1. XRD patterns of HA, mHA, and Zn-Ga:mHA nanoparticles.

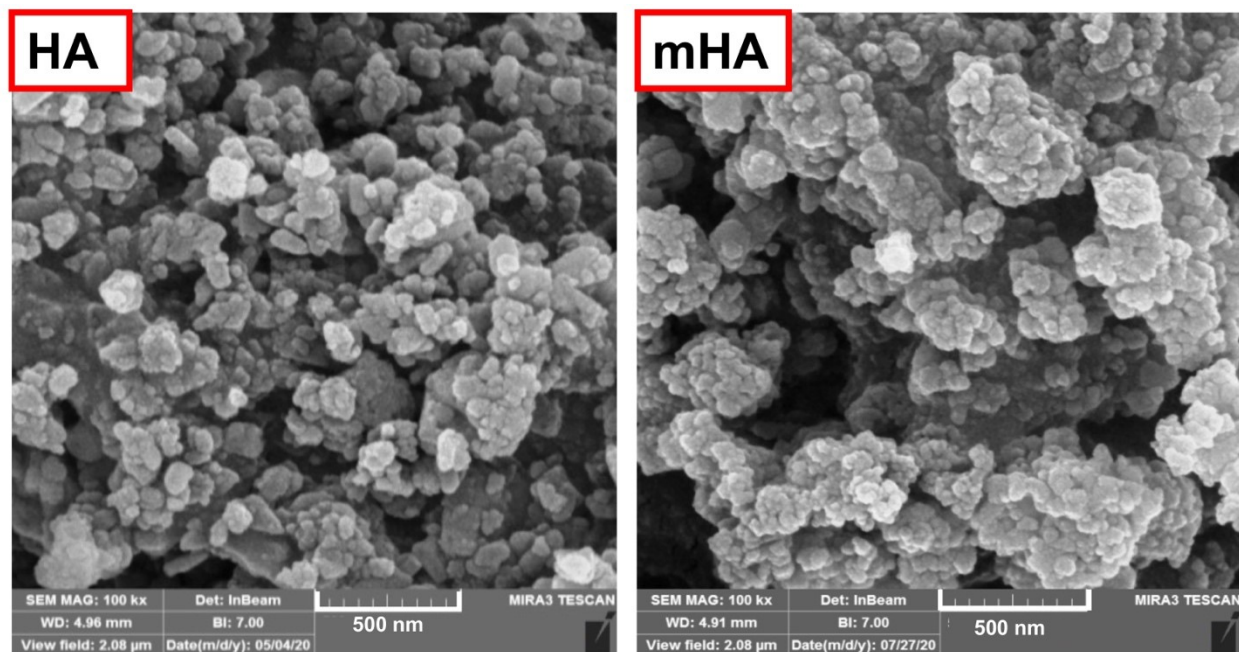


Figure S2. FESEM images of HA and mHA nanoparticles

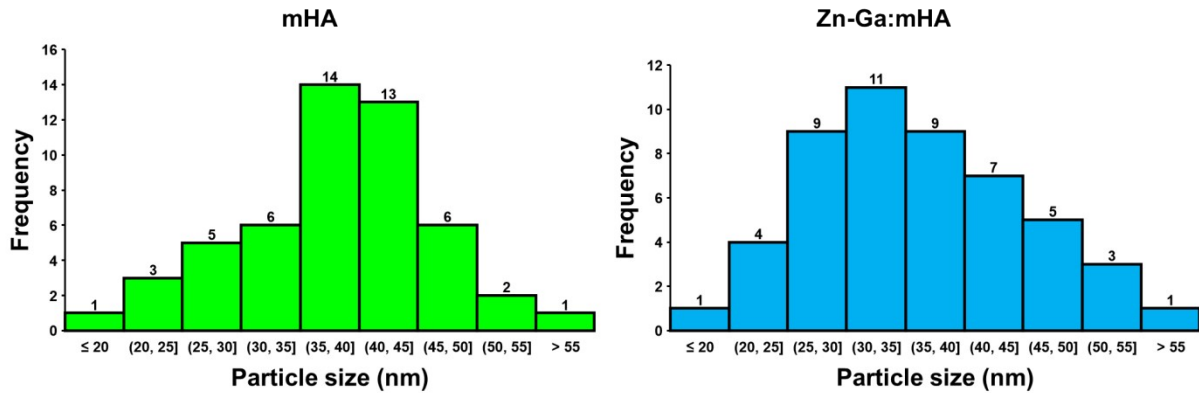


Figure S3. Particle size distribution diagram of mHA and Zn-Ga:mHA nanoparticles from FESEM images.

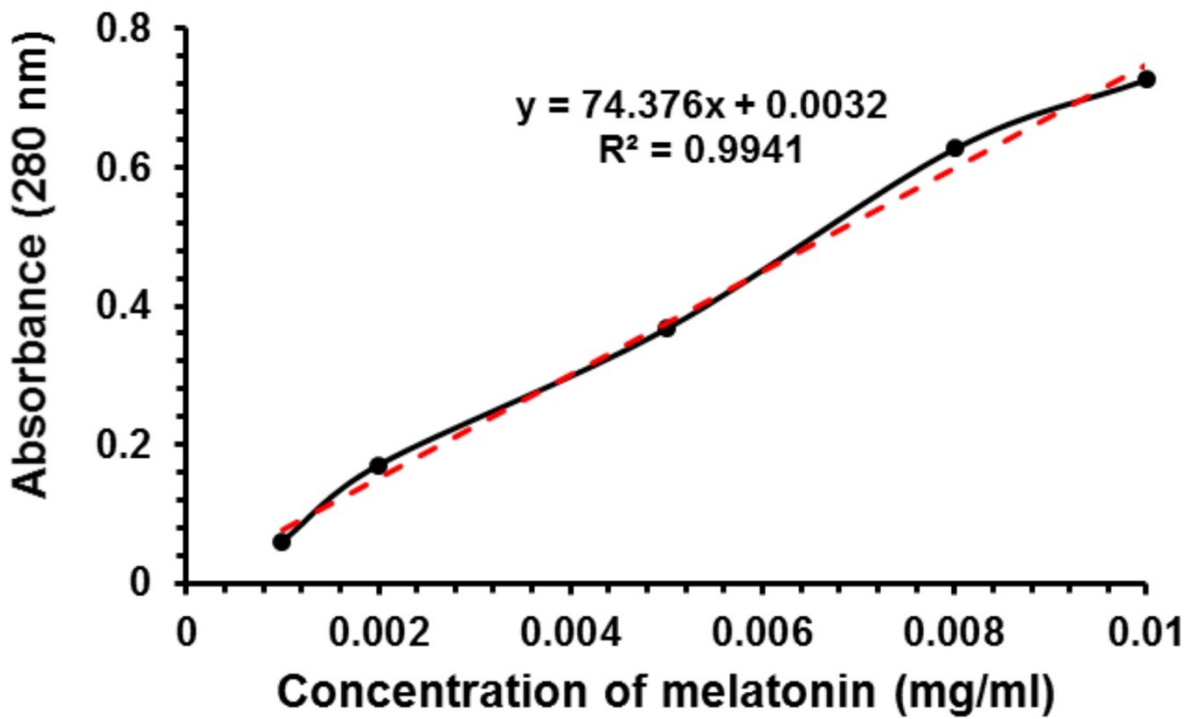


Figure S4. The calibration curve of melatonin at 280 nm in PBS at 37 °C.

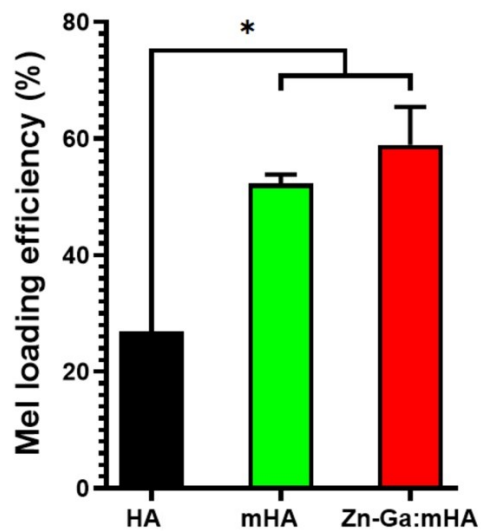


Figure S5. The loading efficiency of Mel in mHA and Zn-Ga:mHA nanoparticles (*:P < 0.05)

Table S2. The results of N₂ absorption and desorption test (BET): specific surface area S_{BET}, volume of holes V_p and size of holes D_p.

Samples	S _{BET} (m ² ·g ⁻¹)	V _p (cm ³ ·g ⁻¹)	D _p (nm)
HA	4.651±0.4	0.055±0.01	-
mHA	7.345±0.27	0.063±0.01	10.65±0.2
Zn-Ga:mHA	15.558±0.4	0.144±0.02	10.61±0.4