Supplementary Information (SI) for RSC Advances.
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Supplementary Information

Tri-layer Structured Intelligent Hydrogel Dressing for Controlled-Release Antibacterial Treatment of Chronic Diabetic Wounds

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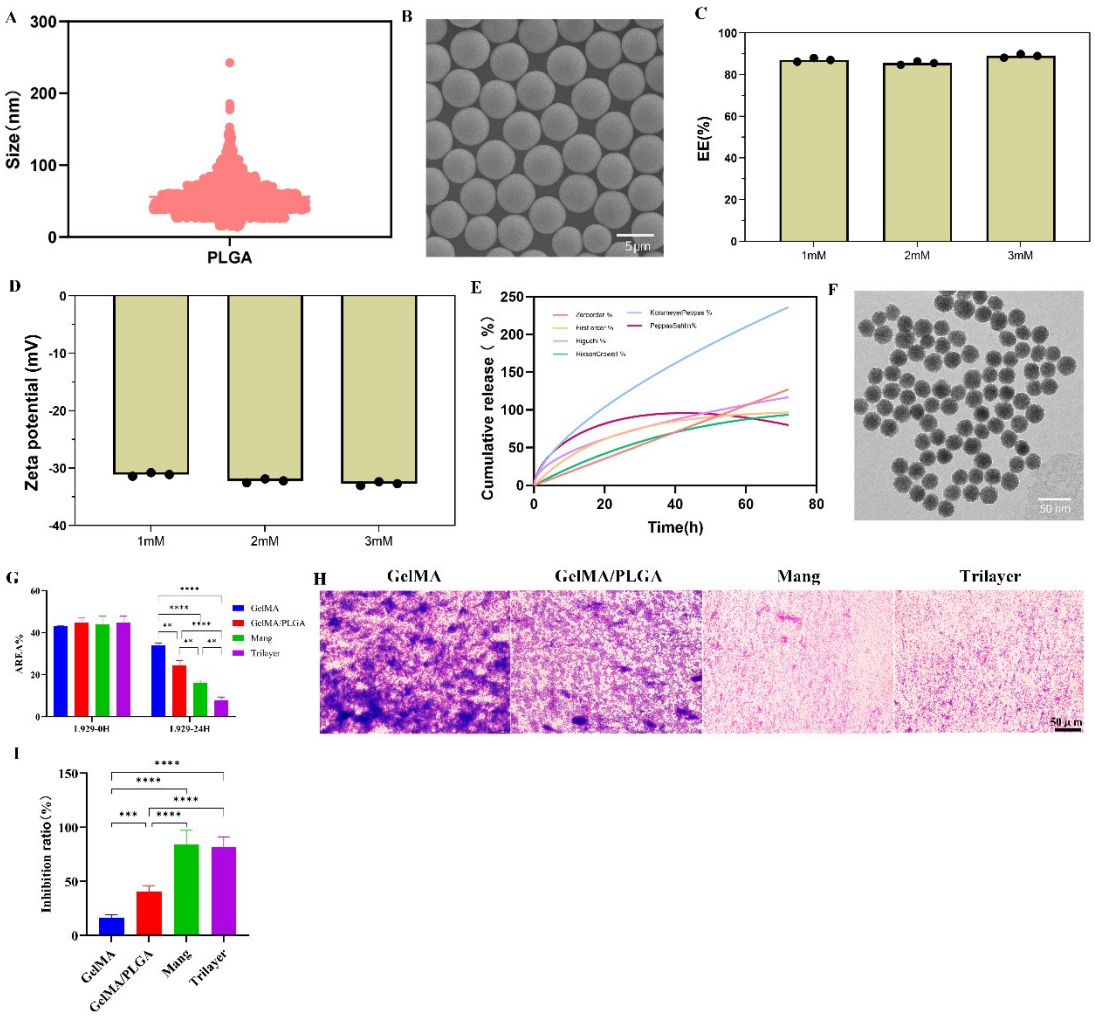

Figure S1. (A) Particle size distribution of the PLGA microspheres, measured by dynamic light scattering (DLS), shows a narrow, monomodal distribution centered around 4.8 μm.

(B) SEM image of the poly(lactic-co-glycolic acid) (PLGA) microspheres used as drug carriers; the microspheres appear smooth and spherical (scale bar = 5 μm).

(C) Encapsulation Efficiency (EE) of Mangiferin with different concentration.

(D) Zata potential of particle was measured by dynamic light scattering (DLS) using a Zetasizer Nano ZS instrument (Malvern, UK).

(E) Kinetic modeling of the drug release data: experimental release profiles (symbols) are overlaid with fitted curves for multiple empirical models (Higuchi, zero-order, first-order, Hixson–Crowell, Korsmeyer–Peppas, and Peppas–Sahlin).

(F) Transmission electron microscopy (TEM) image of the silver nanoparticles (AgNPs) used in the formulations shows uniform spherical particles (scale bar = 50 nm).

(G) Scratch wound images revealed distinct differences in the migration behavior of fibroblasts among the treatment groups. (****$p<0.0001$, Two-ANOVA).

(H) (I) The biofilm inhibition assay: wells treated with tri-layer extracts had significantly lower crystal violet staining than control of GelMA group.