nanomaterials

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Supplementary Materials

Tween® Preserves Enzyme Activity and Stability in PLGA Nanoparticles

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Table S1. List of the abbreviations used in the main text

- % = percentage
- °C = Degrees Celsius
- AFM = Atomic Force Microscopy
- B-Glu = β-Glucosidase
- BBB = Blood Brain Barrier
- BSA = Bovine Serum Albumin
- CNS = Central Nervous System
- DCM = dichloromethane
- EE = entrapment efficiency
- ELSD = Evaporative Light Scattering Detector
- ERT = Enzyme Replacement Therapy
- GoF = Goodness of Fit
- h = hours
- ITC = Isothermal titration calorimetry
- J = joules
- K = kelvin
- KA = binding constant
- kHz = kilohertz
- LC = loading capacity
- ln = logarithm
- LSDs = Lysosomal Storage Disorders
- mg = milligram
- mg/mL = milligram per milliliter
- min = minute
- mL/min = milliliter per minute
- mm/Hg = millimeters of mercury

- mM= millimolar
- mol = mole
- MU = 4-Methylumbelliferone
- nm = nanometer
- NP = Nanoparticle
- p = p-value
- PBS = Phosphate-buffered saline
- PCS = Photon Correlation Spectroscopy
- PDI= polydispersity index
- PLGA = Poly(D, L-lactide-co-glycolide)
- pmol = picomole
- PVA = poly(vinyl alcohol)
- R = gas constant (8.314 J $K^{-1}mol^{-1}$)
- RP-HPLC = Reversed-Phase High-Performance Liquid Chromatography
- rpm = revolutions per minute
- RT = room temperature
- s = second
- S.D. = standard deviation
- SEM-FEG = Scanning Electron Microscopy Field Emission Gun
- T = temperature in Kelvin
- VWD = Variable wavelength detector
- β-Glu = β-Glucosidase
- ΔG = Gibbs Free Energy
- ΔH = enthalpy change
- ζ-pot = zeta potential
- μg = microgram
- μg/mL = microgram per milliliter
- μL = microliter
- μM = micromolar

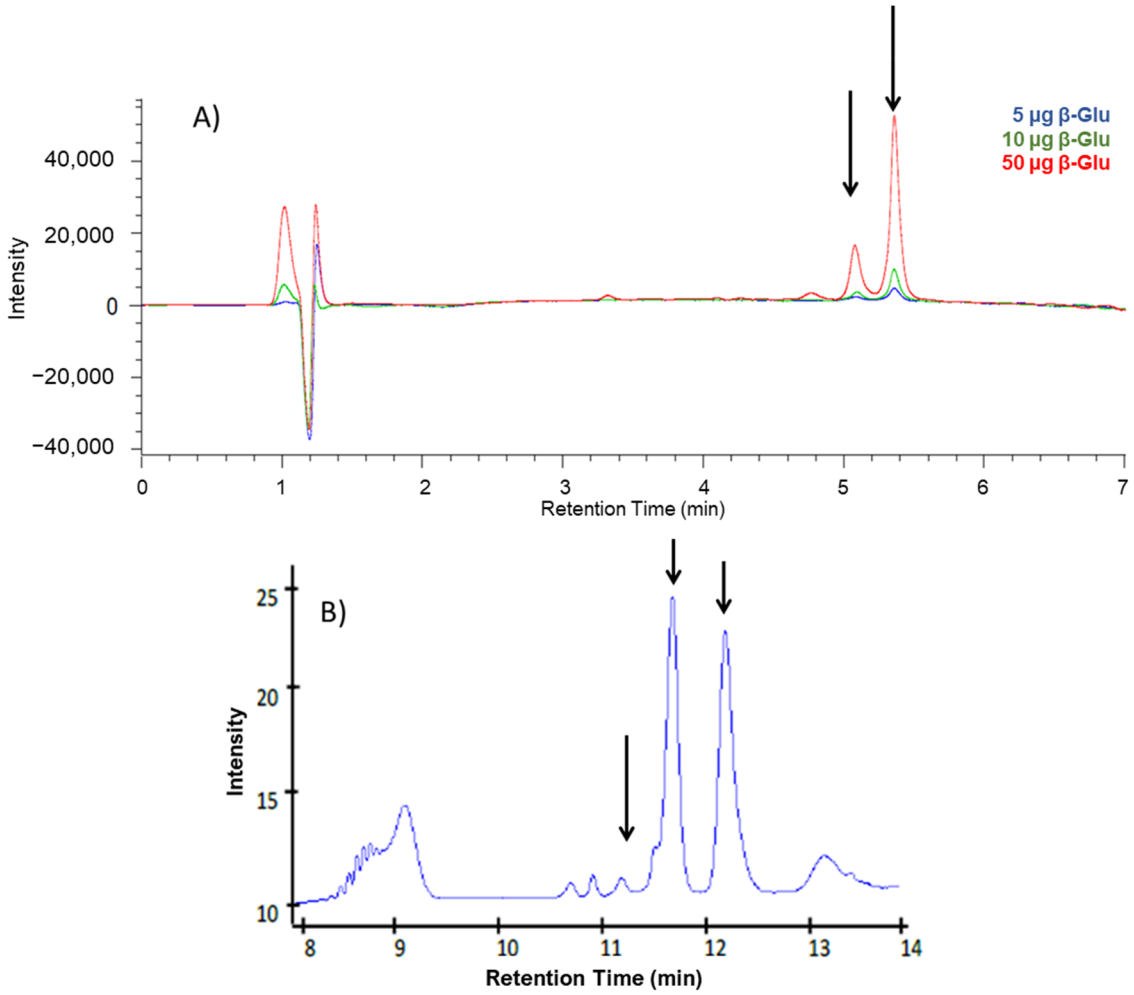

Figure S1. HPLC Quantification. Representative Chromatograms for the quantification of (**A**) β-Glucosidase and (**B**) Tween® 20.

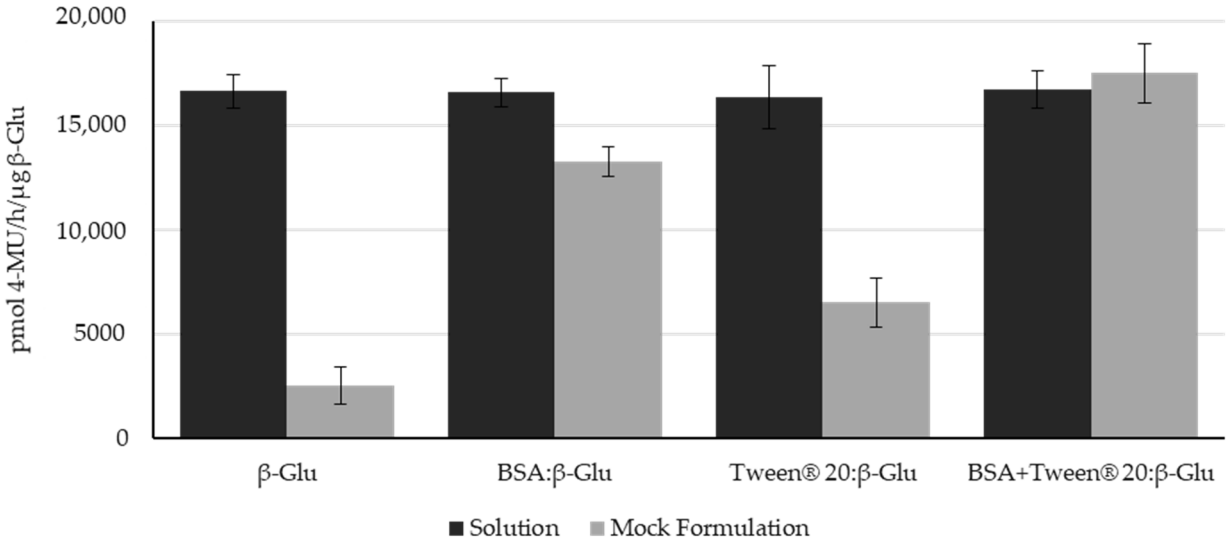

Figure S2. β-Glucosidase Activity Controls. Control samples of the β-Glucosidase activity in solution or after a mock formulation process (including organic solvents, sonication, and centrifugation) with or without the presence of each stabilizer.

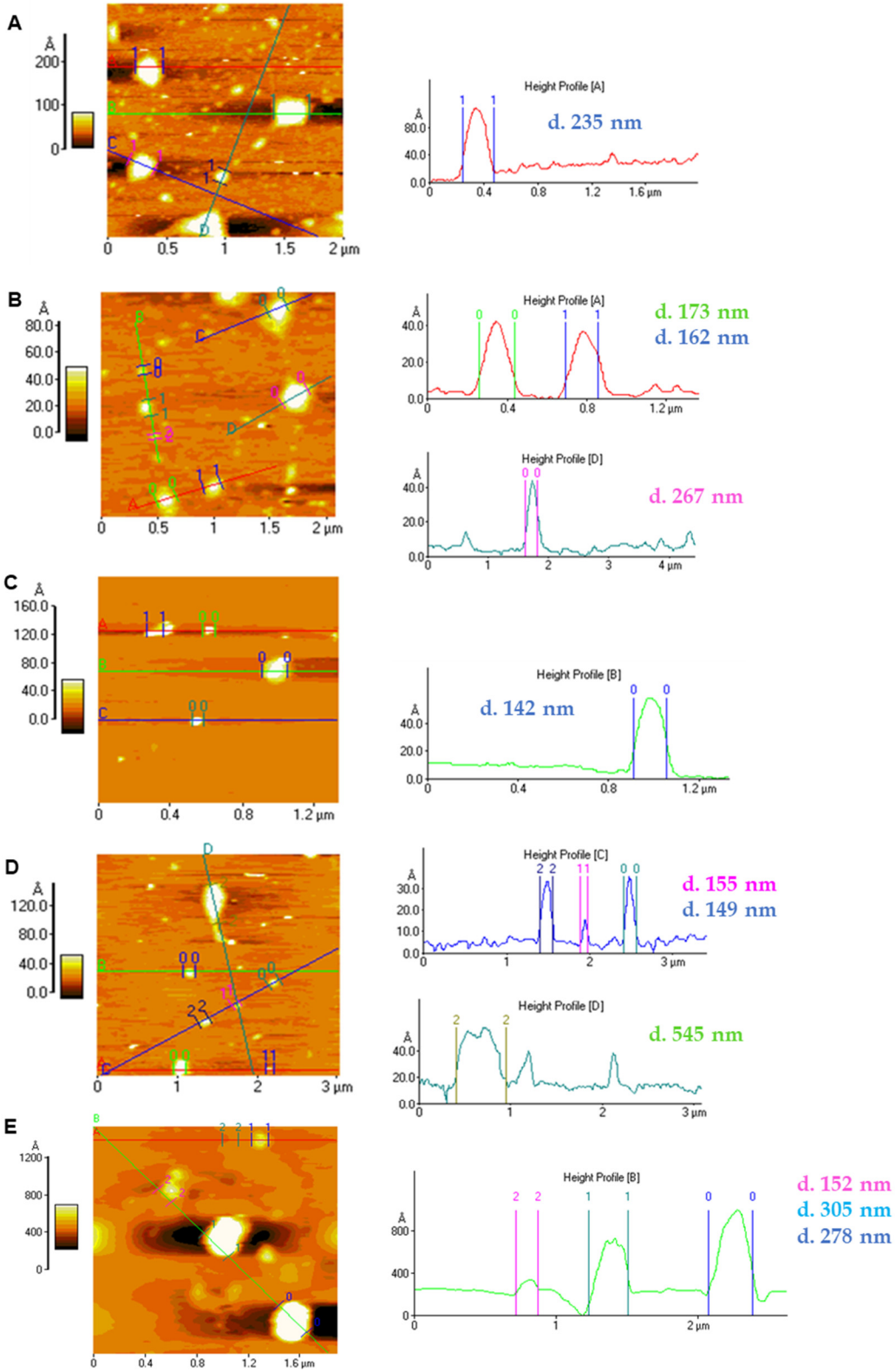

Figure S3. **AFM images of the different Nanoparticle preparations**. (**A**) NPs PLGA:Solution0; (**B**) NPs PLGA:Solution1; (**C**) NPs PLGA:Solution2; (**D**) NPs PLGA:Solution3; (**E**) NPs PLGA:Solution4. Note: all formulations contain 5 mg β-Glu.