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Supporting Information

Biodegradable hyaluronic acid-based, nitric oxide-releasing nanofibers for potential wound healing applications

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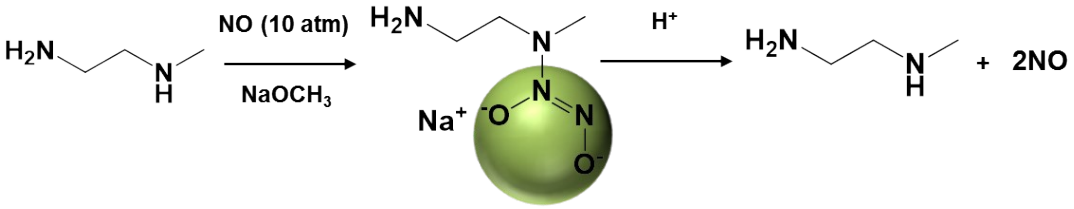

Scheme S1. Structure and NO decomposition mechanism of the NONOates used in this study.

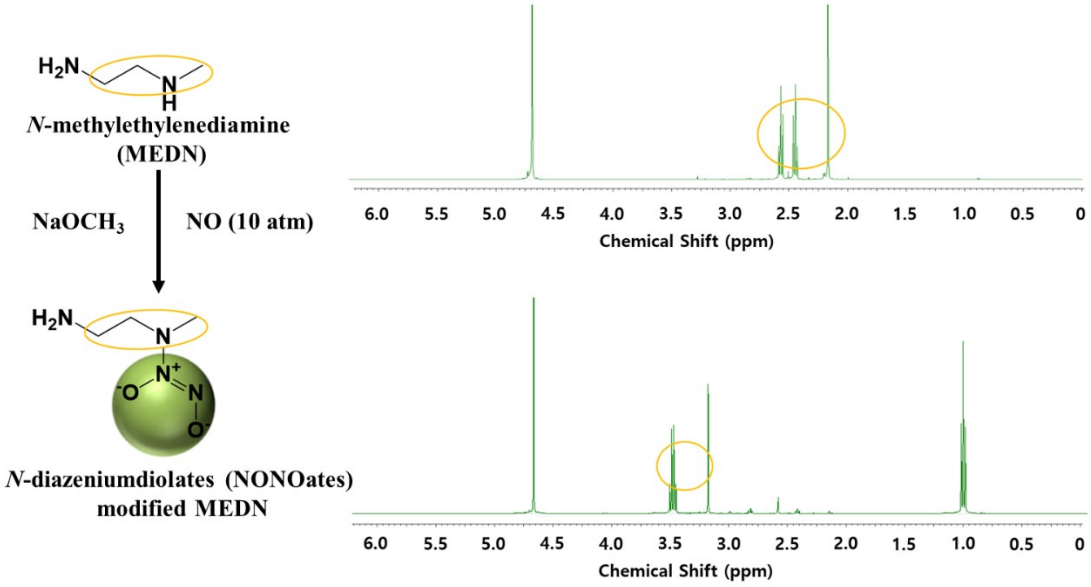

Fig. S1 Scheme and ^{1}H NMR spectra of MEDN and (MEDN)-NONOates.

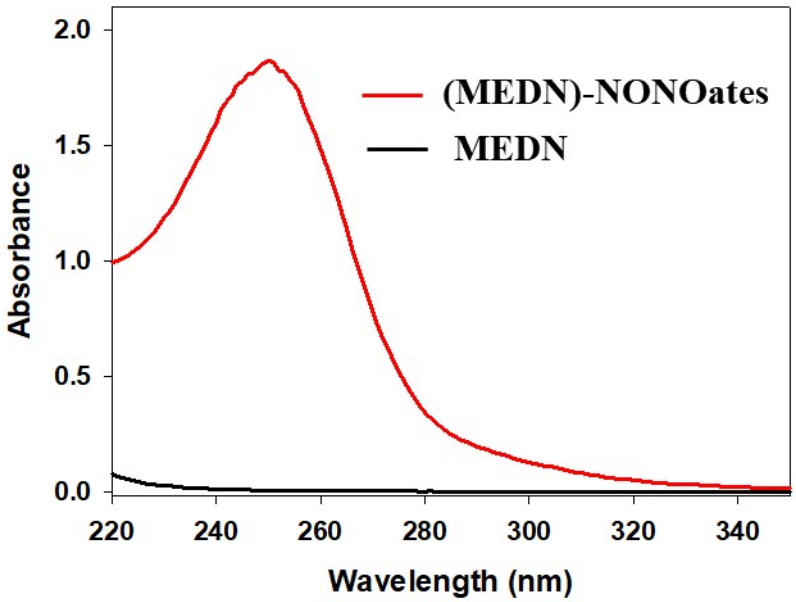

Fig. S2 UV-Vis spectra of MEDN and (MEDN)-NONOates at a concentration of 0.125 mg·mL^{-1}.

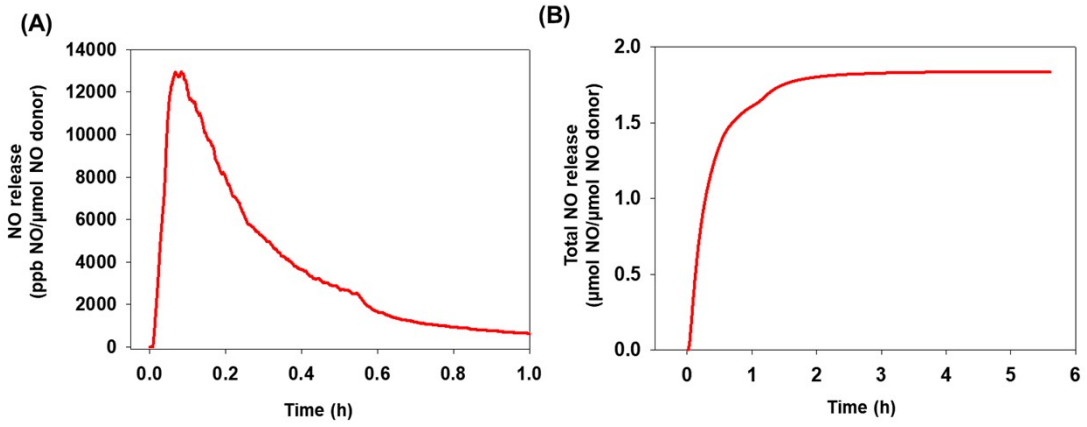

Fig. S3 (A) NO release profiles and (B) total NO release of NONOate modified MEDN.

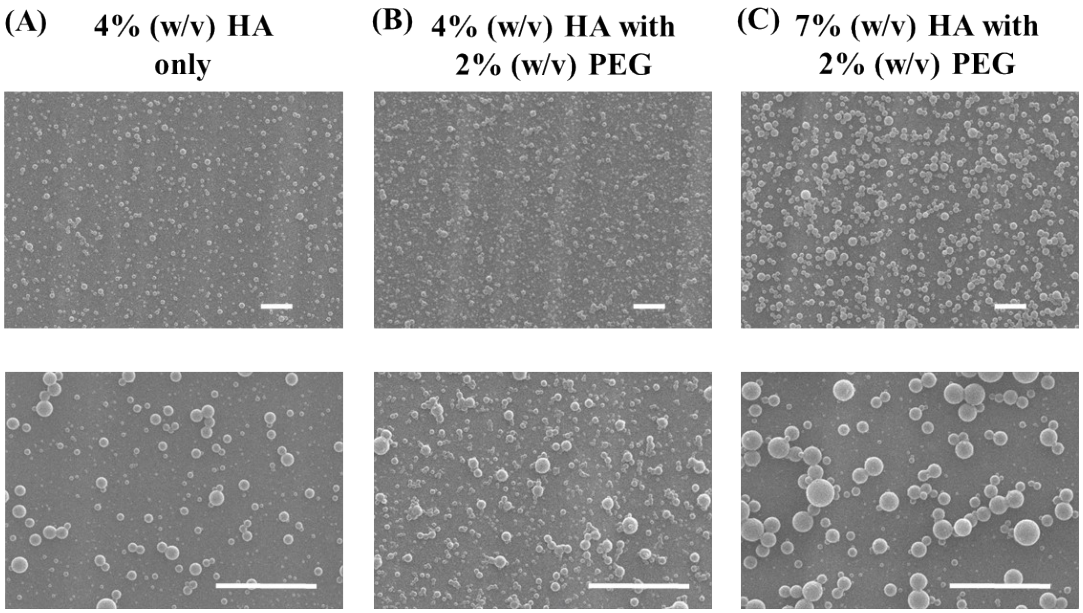

Fig. S4 Representative SEM images of electrospun MA-HA-(MEDN)-NONOates without PEO blend. (A) 4 % (w/v) MA-HA-(MEDN)-NONOates only, (B) 4 % (w/v) MA-HA-(MEDN)-NONOates with 2 % (w/v) 4-arm PEG-SH, and (C) 7 % (w/v) MA-HA-(MEDN)-NONOates with 2 % (w/v) 4-arm PEG-SH. Scale bar = 5 μm.

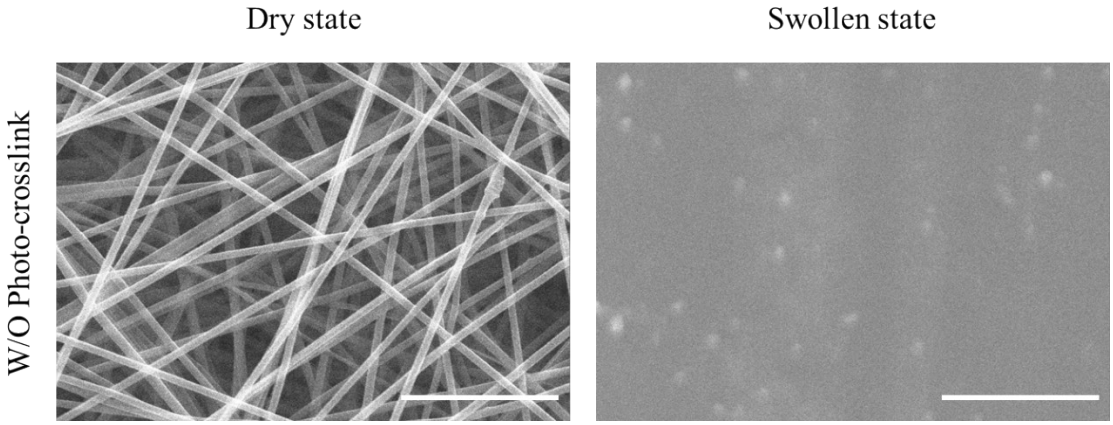

Fig. S5 Representative SEM images of 4% (w/v) NO-releasing nanofibers (without photo-crosskink) in the dry and swollen states. Scale bar = 5 μm.

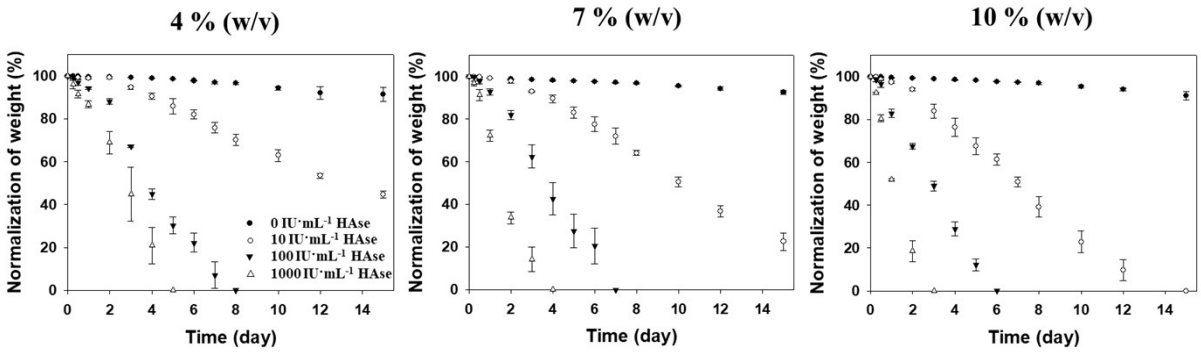

Fig. S6 *In vitro* degradation of NO-releasing 4, 7, and 10 % (w/v) MA-HA-(MEDN)-NONOate-based nanofibers by 10, 100, and 1,000 IU·mL^{-1} HAse (mean ± standard deviation with n = 4).

Table S1. Control of *N*-diazeniumdiolate (NONOate) modification on the hyaluronic acid (HA) carboxyl group by reaction conditions[a]

Sample	MA-HA-TBA	EDC	NHS	(MEDN)-NONOates
MA-HA:(N-MEDM)-NONOates = 1:2	**1**	**1.5**	**1.5**	**2**
MA-HA:(N-MEDM)-NONOates = 1:5	**1**	**2**	**2**	**5**
MA-HA:(N-MEDM)-NONOates = 1:7	**1**	**2.5**	**2.5**	**7**

[a] Numbers represent the relative feed molar ratios of the reactants.

Table S2. NO release properties of (MEDN)-NONOates in PBS pH 7.4 and 37 °C [a]

Sample	t[NO] (μmol NO/ μmol NO donor)[b]	$t_{1/2}$ (min)[c]	$[NO]_m$ (ppb NO/ μmol NO donor)[d]	t_m (min)[e]	t_d (h)[f]	% Conv[g]
(MEDN)-NONOates	1.84	15	12,960	5	5.6	92

[a] Measured in deoxygenated phosphate-buffered saline (PBS; 0.01 M, 50 mM NaCl, pH 7.4) at 37 °C.

[b] t[NO], total amount of NO released (μmol NO/μmol MEDN-NONOates).

[c] $t_{1/2}$, half-life of NO release (min).

[d] $[NO]_m$, maximum flux of NO release (ppb NO/μmol MEDN-NONOates).

[e] t_m, time necessary to reach $[NO]_m$ (min).

[f] t_d, duration of NO release (h).

[g] % conv, amine to NONOates conversion efficiency, % conv = mole of NO released/ (2 × mole of secondary amine).