

Bioadhesive hyaluronic acid/dopamine hydrogels for vascular applications prepared by initiator-free crosslinking

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Supplementary materials.

Table S1. Size exclusion chromatography-multiangle light scattering measurement of M_n , M_w and PDI of the raw HA

	AVG (n=3)	SD
M_n [g/mol]	1.67E+05	8.7E+03
M_w [g/mol]	1.90E+05	2.5E+03
PDI	1.1	0.0

Table S2. Gradient of mobile phases for U-HPLC detection of atorvastatin

<i>Time (minutes)</i>	<i>A, 10 mM Ammonium formate + 0.1 formic acid, [%]</i>	<i>B, acetonitrile + 0.1 formic acid, [%]</i>
0.0	60	40
3.2	20	80
3.3	60	40
5.0	60	40

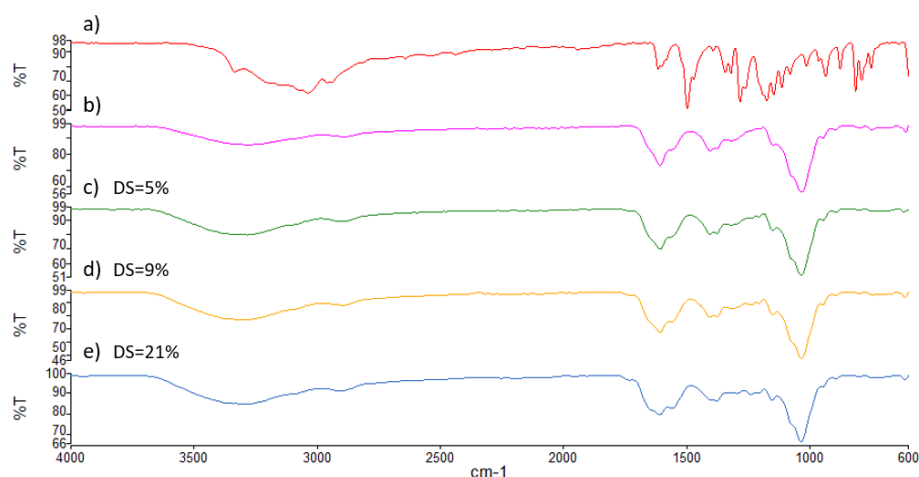


Figure S1. FTIR spectra of a) dopamine, b) hyaluronic acid, c-e) HA-dopamine with different degrees of substitution. The amide bond, confirming the successful conjugation of dopamine to HA is seen at 1610 cm⁻¹, coinciding with C=O group of HA. The wide band at 3280 cm⁻¹ represents the hydroxyl groups of HA. The stretching vibrations belonging to dopamine's C-H at 2920 cm⁻¹ and C=C at 1520 cm⁻¹, are also present in the HA-Dop, however, to a less extent, as it is less concentrated than pure dopamine.

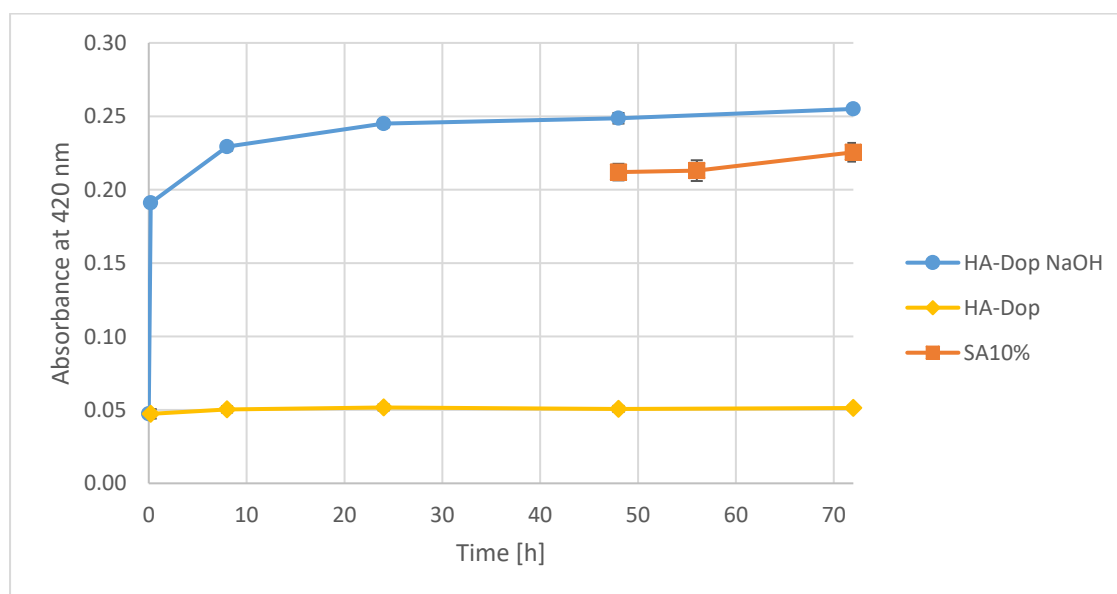


Figure S2. UV absorbance at 420 nm (quinone) of HA-Dop (DS 9%), with addition of NaOH and sodium ascorbate (SA) at 48 h, n=3.

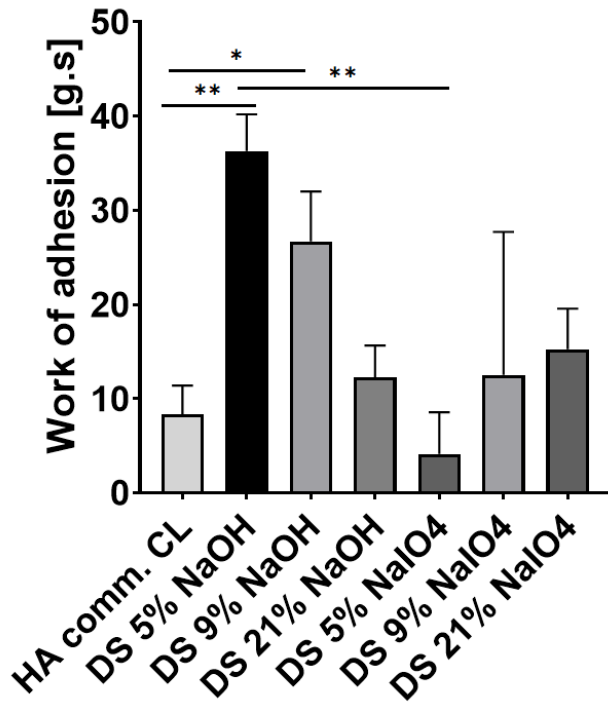


Figure S3. Work of adhesion of different gels measured on Texture Analyzer with porcine aorta tissues. * $p \leq 0.01$; ** $p \leq 0.0001$.

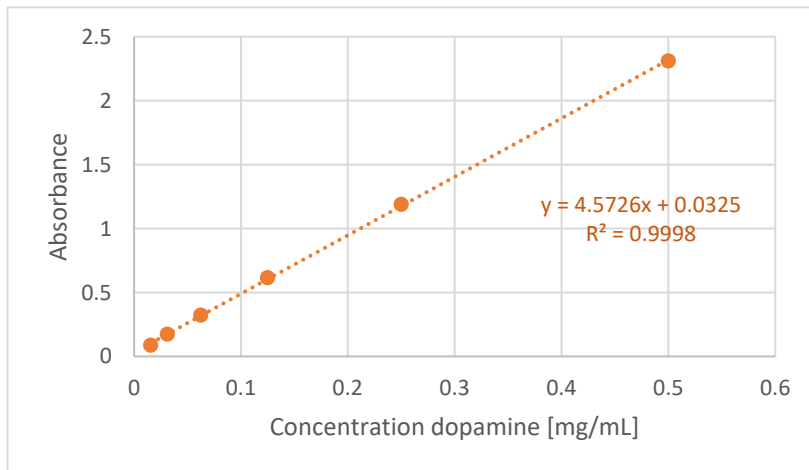


Figure S4. Dopamine calibration curve in dH₂O at 280 nm

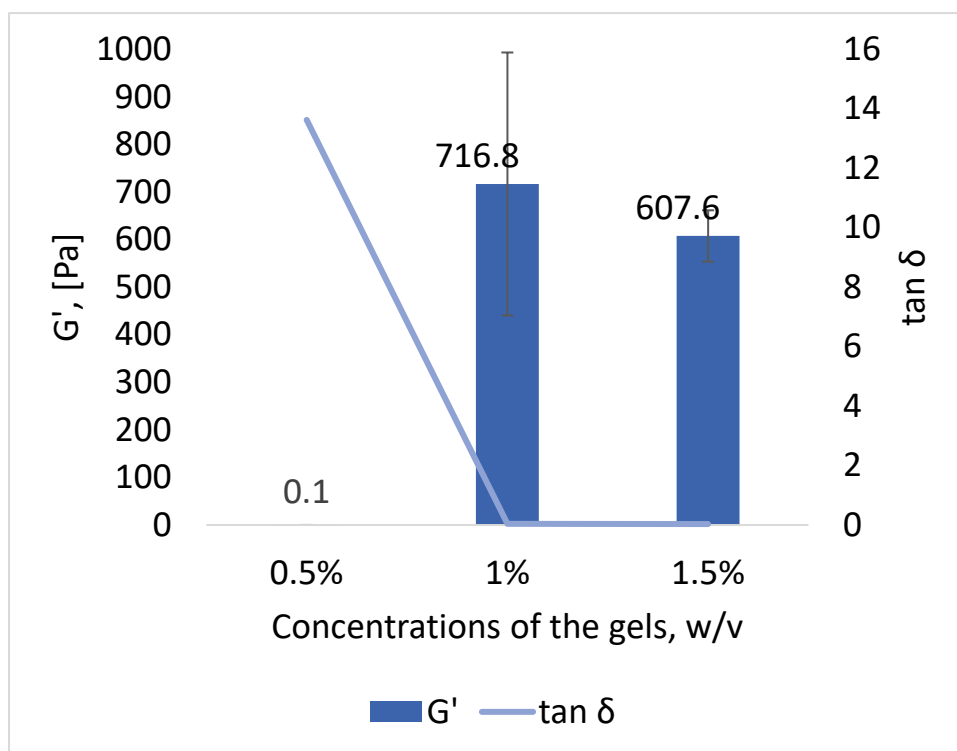


Figure S5. Evolution of G' and $\tan \delta$ of cross-linked by 1:2 NaIO_4 gels (DS 9%) at different concentrations from 0.5% to 1.5%, $n = 3$, error bars = SD. The 0.5% is a liquid solution, while 1.0% and 1.5% are too rigid and inhomogenous for perivascular application.

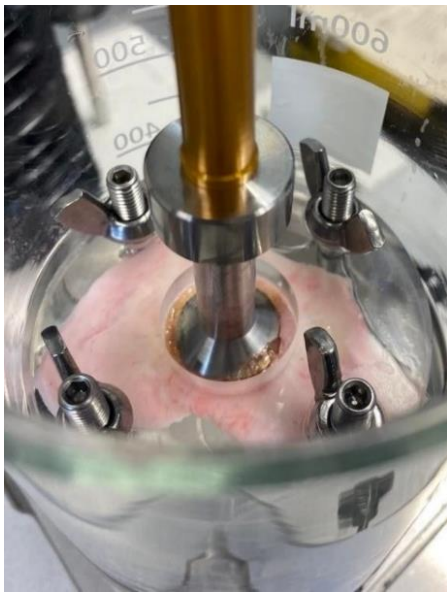
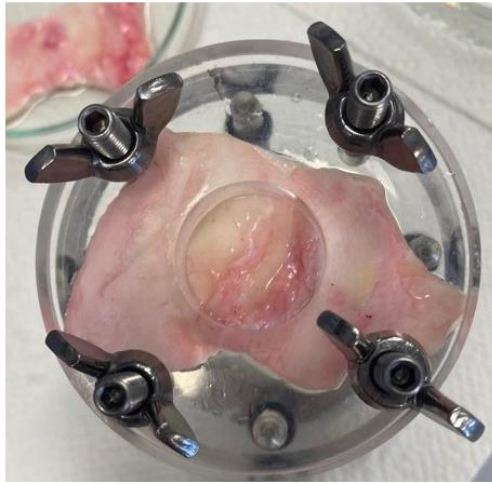


Figure S6. Bioadhesion testing set-up, views from different angles.

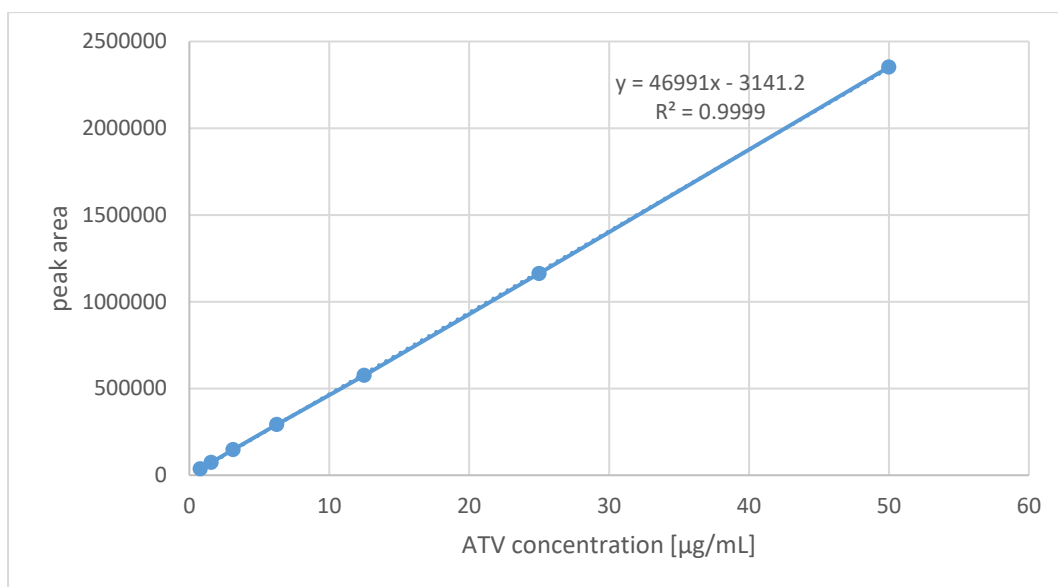


Figure S7. Calibration curve of atorvastatin obtained by monitoring eluates of calibration standards at 245 nm