

Supporting Information for Liposome-containing Mechanoresponsive Hydrogels

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S1: Characterization of DextCHO_x

DextCHO_x (100 mg) was dissolved in hydroxylamine hydrochloride (HONH₂, 25 mL, 0.25 M) and titrated with sodium hydroxide (0.1 M). The degree of oxidation was then calculated using the equivalence point determined from the first derivative of the curves (Figure 1).

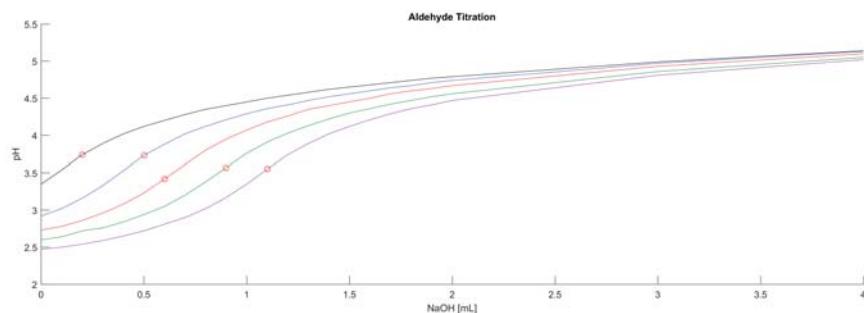


Figure 1: Titration graphic for DextCHO₁ (black), DextCHO₄ (blue), DextCHO₅ (red), DextCHO₈ (green), DextCHO₁₀ (purple). The red circles show the equivalence points.

Table 1: Dextran oxidation and properties of oxidized dextran.

Name	Equivalence point	Volume of NaOH (mL)
DextCHO ₁	3.74	0.2
DextCHO ₄	3.73	0.5
DextCHO ₅	3.42	0.6
DextCHO ₈	3.57	0.9
DextCHO ₁₀	3.55	1.1

$$\text{Degree of oxidation} = n_{\text{Aldehyde}}/n_{\text{GlucoseUnits}} \quad (1)$$

$$n_{\text{Aldehyde}} = 2 * n_{\text{Hydroxylamine}} = 2 * C_{\text{NaOH}} * V_{\text{NaOH}} \quad (2)$$

S2: Molecular Weight of the Dextran

The molecular weight of all the oxidized dextran polymers (DextCHO_x) was determined by Gel Permeation Chromotography (GPC) using Pullulan as reference and phosphate buffer (0.02 M) as mobile phase. The results are shown in Table 2.

Table 2: Dextran oxidation and properties of oxidized dextran.

Name	Degree of oxidation (%)	NaIO ₄ (mol %)	Mw (Dalton)
Dextran	0	0	47169, 60%; 288915, 28%
DextCHO ₁	1	4.50	60578, 53%; 285441, 34%
DextCHO ₄	4	8.72	54574, 72%; 276762, 22%
DextCHO ₅	5	12.82	76304, 98%; 1191942, 2%
DextCHO ₈	8	14.75	59165, 99%; 1141178, 1%
DextCHO ₁₀	10	17.05	48036, 99%; 1128598, 1%