

Polymerization of Diaspirin Crosslinked Hemoglobin (DCLHb) with Water Soluble, Non Immunogenic Polyamide Crosslinking Agents.

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Supporting Information

Table S-1. Effect of Polyamide Chain Length on the Course of Polymerization

Molar ratio of PA to DCLHb	SEC Profile			P ₅₀ , mm Hg (n)
	% Monomer (RT) ^a	% Oligomer	% HMW Polymer	
DCLHb				
0	100 (19.9)	0	0	32 (2.6)
1a (MW 4200), [DCLHb] = 15 g/dL				
2.5	44 (18.1)	54	2	27 (1.7)
3	39 (17.3)	48	13	29 (1.6)
3.5	55 (17.4)	34	33	32 (1.7)
4	gel	-	-	
1a (MW 7600), [DCLHb] = 15 g/dL				
2.0	57 (19.5)	43	0	28 (2.2)
2.7	24 (19.3)	76	0	29 (1.9)
3.3	9 (19.1)	91	0	29 (1.9)

^a Number in parentheses is the elution time in minutes of the corresponding peak maximum.

Table S-2. Effect of pH on the Polymerization Profile of DCLHb

Molar ratio of PA to DCLHb	SEC Profile ^a			P ₅₀ , mm Hg (n)
	% Monomer (RT)	% Oligomer I	% Oligomer II	
DCLHb				
0	100 (19.9)	0	0	32 (2.6)
1b (MW 5200), 0.1 M HEPES, pH 8				
2	33 (19.4)	58 (18.1)	8 (shoulder)	ND
2.5	21 (19.3)	67 (18.1)	11 (shoulder)	31 (2.3)
3	13 (19.1)	69 (17.5)	17 (shoulder)	31 (2.2)
3.5	8 (19.0)	69 (17.2)	21 (shoulder)	32 (2.1)
4	4 (shoulder)	70 (16.8)	24 (14.2)	33 (2.1)
4.5	-	72 (16.7)	27 (14.0)	33 (2.1)
1b (MW 5200), 0.1 M Borate, pH 9				
2	19 (19.1)	60 (18.1)	20 (shoulder)	30 (2.2)
2.5	10 (shoulder)	71 (17.5)	17 (14.9)	30 (2.1)
3	6 (shoulder)	66 (17.2)	27 (14.6)	29 (2.1)
3.5	-	66 (16.9)	33 (14.6)	32 (1.9)
4	-	64 (16.8)	35 (14.3)	31 (1.9)
1a (MW 5600), 0.1 HEPES, pH 8				
2.5	15 (19.4)	66 (17.1)	17 (shoulder)	30 (2.4)
3	10 (19.3)	65 (16.1)	25 (shoulder)	29 (2.3)
3.5	6 (19.3)	64 (16.4)	29 (shoulder)	28 (2.3)
4	3 (19.3)	61 (15.8)	34 (shoulder)	30 (2.3)
1a (MW 5600), 0.1 Borate, pH 9				
2	13 (19.3)	52 (17.3)	35 (shoulder)	30 (2.3)
2.5	8 (19.3)	54 (16.9)	36 (14.0)	29 (2.4)
3	5 (18.9)	50 (16.5)	44 (13.8)	29 (2.3)
3.5	3 (18.9)	48 (16.1)	48 (13.4)	25 (2.0)

^aNumber in parentheses is the elution time in minutes of the corresponding peak maximum.

Table S-3. Polymerization Profile of DCLHb Polymerized with Maleimides and Aldehydes

Molar ratio of PA to DCLHb	SEC Profile ^a			P ₅₀ , mm Hg (n)
	% Monomer (RT)	% Oligomer	% HMW Polymer	
DCLHb				
0	100 (19.9)	0	0	32 (2.6)
4a (MW 4000), [DCLHb] = 15 g/dL (Reducing Agent: Sodium Cyanborohydride)				
2	69 (18.6)	31	0	ND
3	59 (17.6)	41	1	ND
4	55 (17.4)	40	5	ND
5	48 (16.9)	37	15	ND
4a (MW 4000), [DCLHb] = 15 g/dL (Reducing Agent: Borane-Pyridine)				
2	53 (18.8)	47	0	33 (1.9)
3	38 (18.5)	54	8	35 (2.0)
4	36 (17.9)	40	24	36 (2.1)
3a (MW 4080), [DCLHb] = 20 g/dL				
1	50 (19.6)	50	0	20 (1.7)
1.5	45 (18.9)	55	0	22 (1.6)
2	32 (18.7)	58	0	18 (1.7)
2.5	28 (18.3)	54	18	18 (1.7)

^a Number in parentheses is the elution time in minutes of the corresponding peak maximum.

Table S-4. Polymerization of OxyDCLHb or DeoxyDCLHb With 1a (MW 5600)

	SEC Profile ^a				
Molar ratio of PA to DCLHb	% Monomer	% Oligomer I	% Oligomer II	% HMW Polymer	P ₅₀ , mm Hg (n)
[DeoxyDCLHb] = 6 g/dL					
2	16	40 (18.2)	44 (15.4)	0	30 (2.5)
2.5	3	22 (16.5)	63 (11.4)	0	31 (2.4)
3	2	25 (16.0)	46 (11.5)	26	29 (2.2)
3.5	1	22 (16.5)	40 (11.5)	36	31 (2.4)
[DeoxyDCLHb] = 3 g/dL					
5.5	0	38 (15.4)	62 (11.6)	0	36 (2.0)
6	0	32 (15.2)	61 (11.6)	7	34 (1.8)
[OxyDCLHb] = 6 g/dL					
2	18	37 (18.2)	44 (15.3)	0	27 (2.3)
2.5	6	31 (17.5)	62 (12.0)	0	25 (2.0)
[OxyDCLHb] = 3 g/dL					
3	6	69 (16.8)	25 (14.7)	0	23 (1.8)
3.5	2	63 (16.4)	35 (14.2)	0	25 (1.9)
4	0	54 (16.0)	36 (13.7)	0	22 (1.8)
5	0	45 (15.6)	55 (12.2)	0	21 (1.6)
5.5	0	39 (15.5)	61 (11.7)	0	19 (1.5)
6	0	34 (15.2)	61 (11.4)	0	18 (1.5)

^a Number in parentheses is the elution time in minutes of the corresponding peak maximum.