

Electronic Supplementary Material (ESI) for Materials Chemistry Frontiers.

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Sponge-Like Macroporous Cyclodextrin-Based Cryogels for Controlled Drug Delivery

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NMR spectra of synthesized monomers 1–6

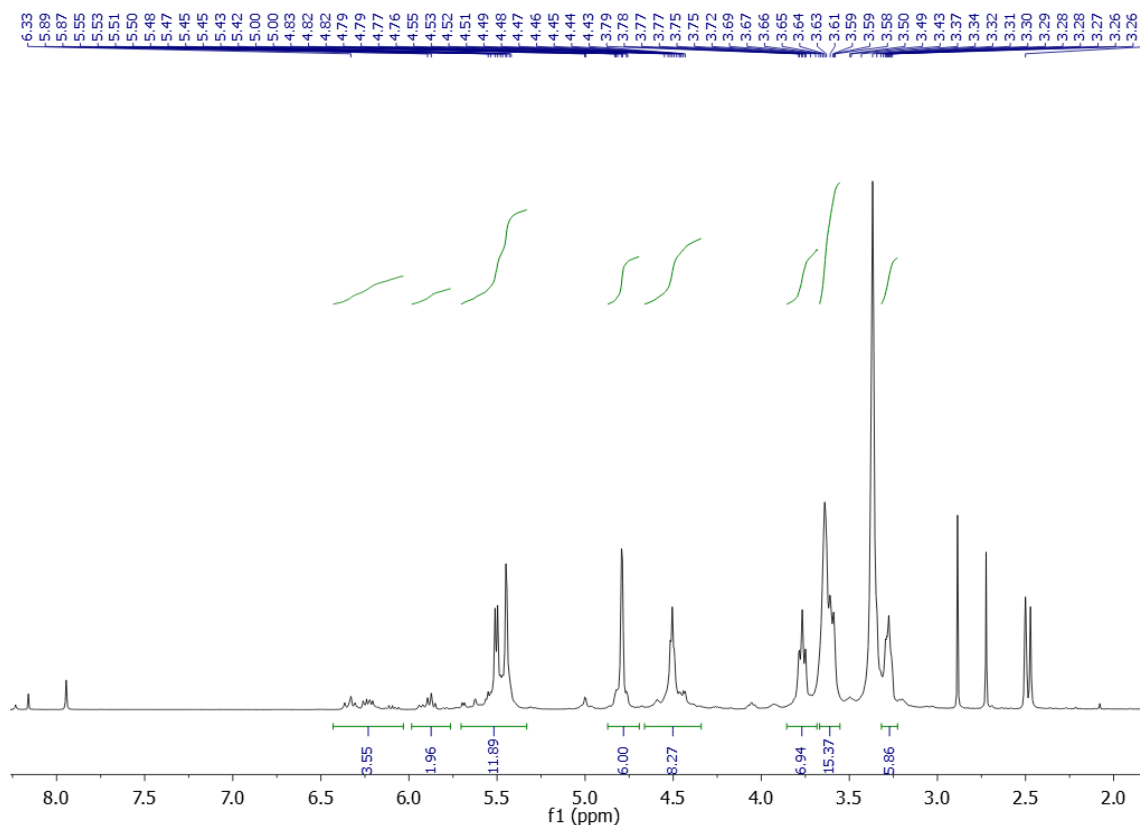


Fig. S1 ^1H NMR spectrum of compound 1.

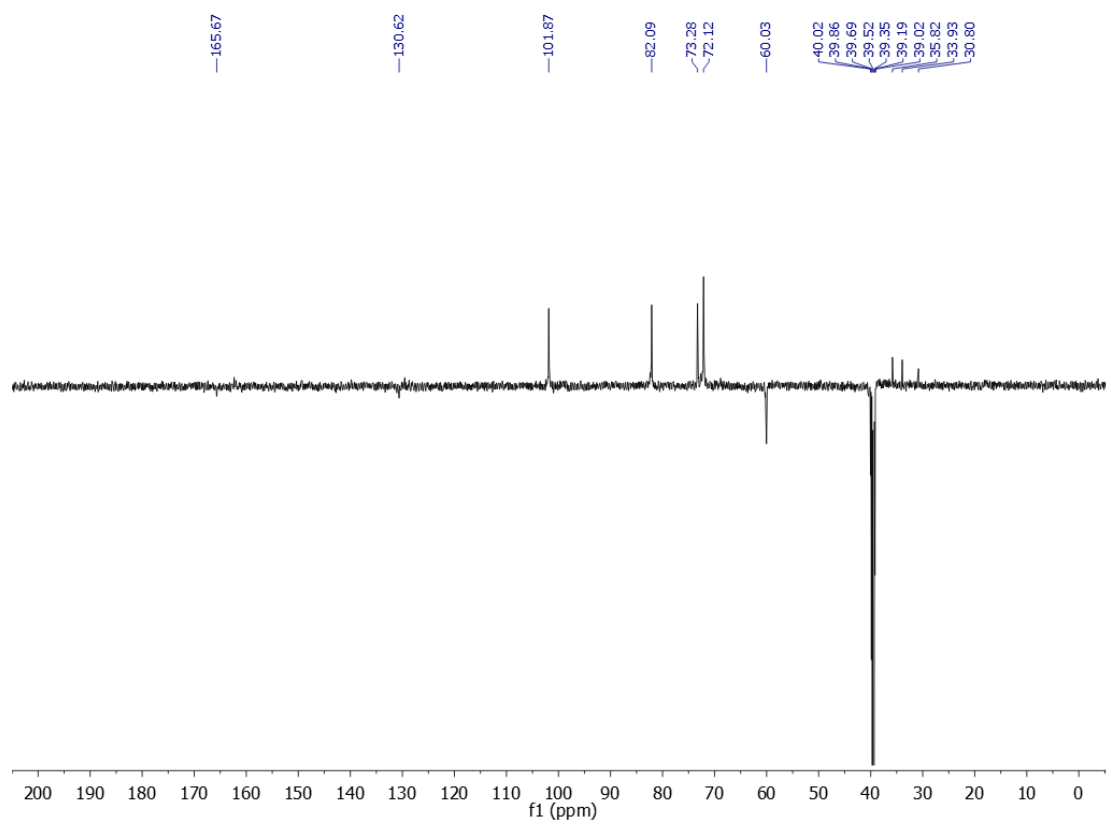


Fig. S2 APT NMR spectrum of compound 1.

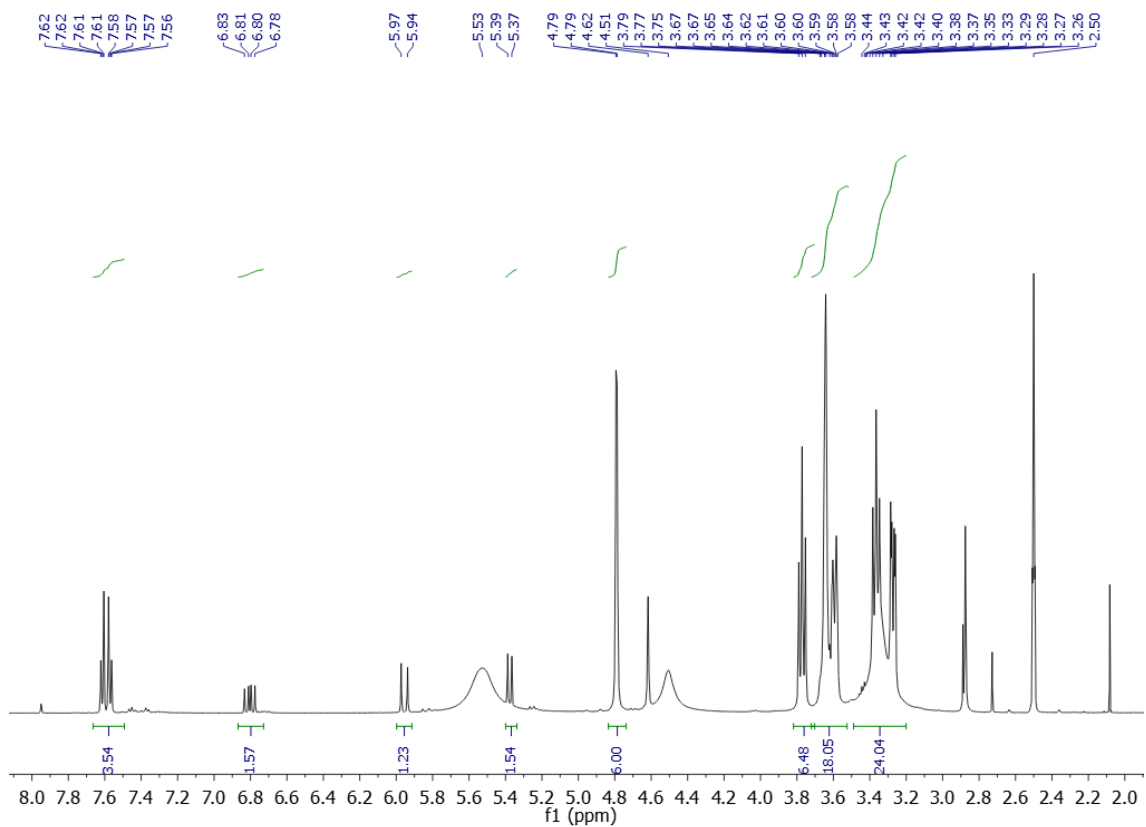


Fig. S3 ^1H NMR spectrum of compound 2

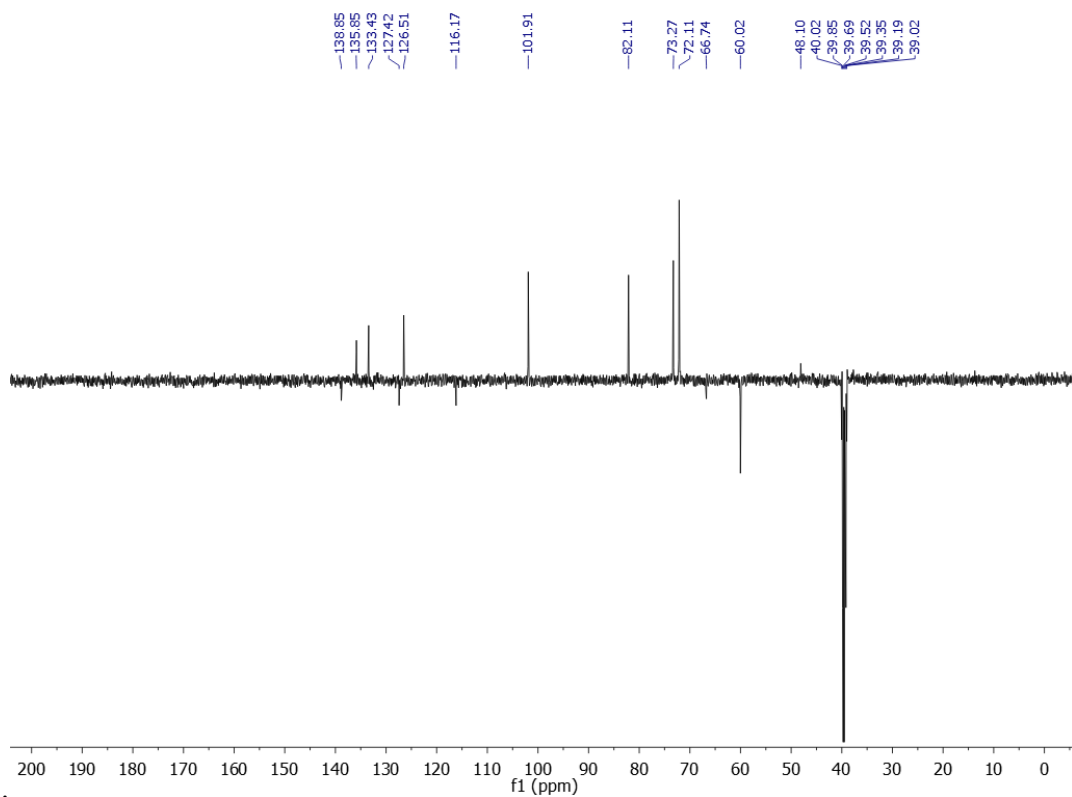


Fig. S4 APT NMR spectrum of compound 2.

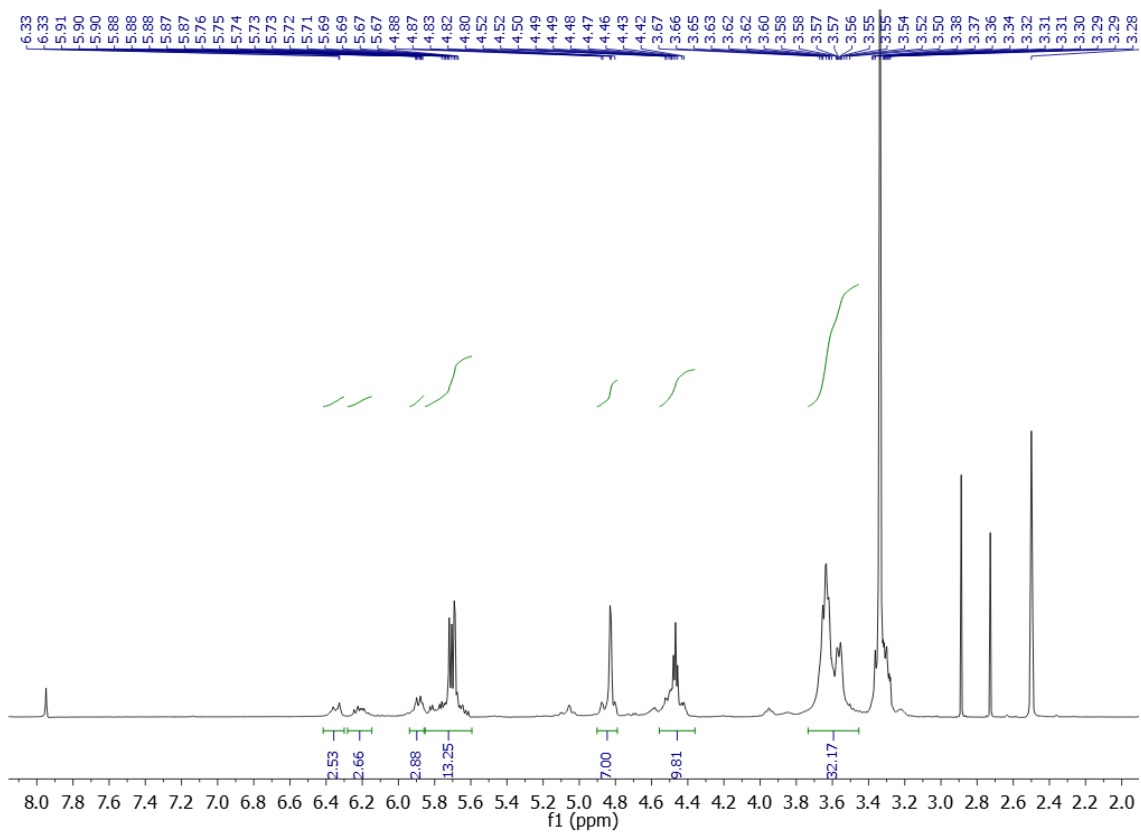


Fig. S5 ^1H NMR spectrum of compound **3**.

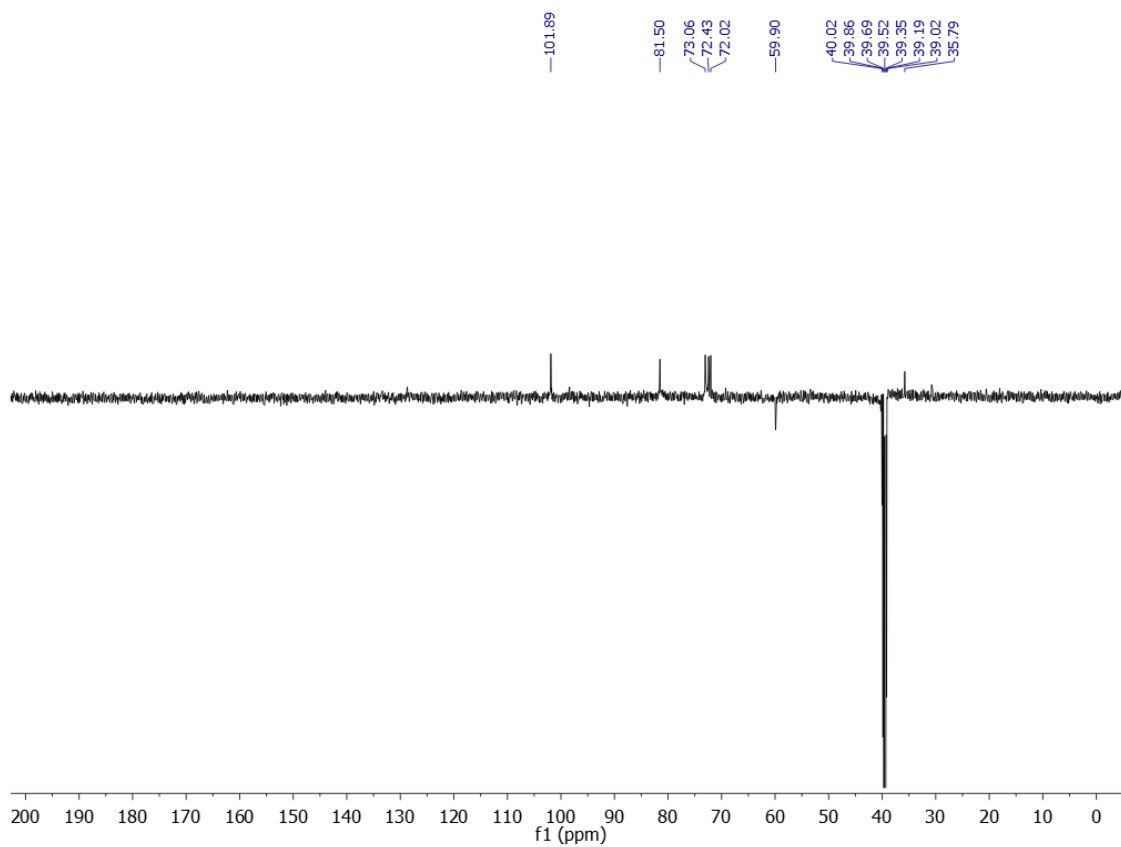


Fig. S6 APT NMR spectrum of compound **3**.

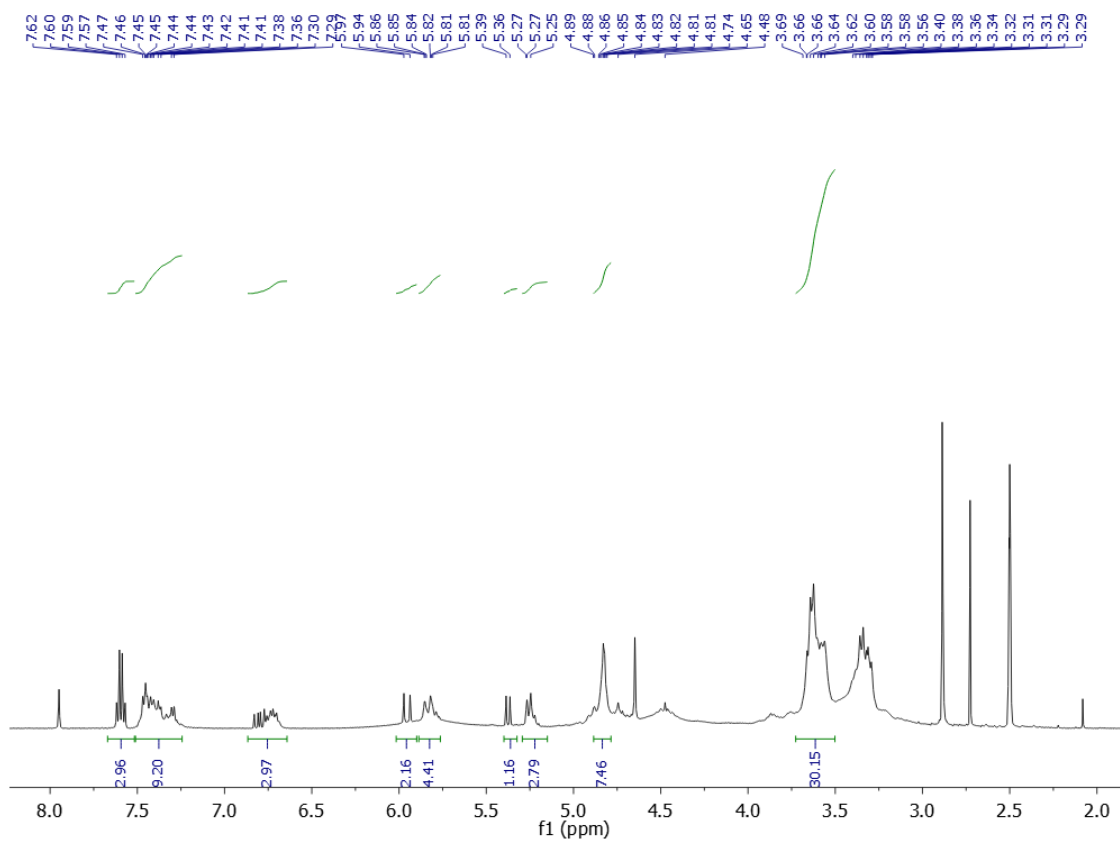


Fig. S7 ^1H NMR spectrum of compound 4.

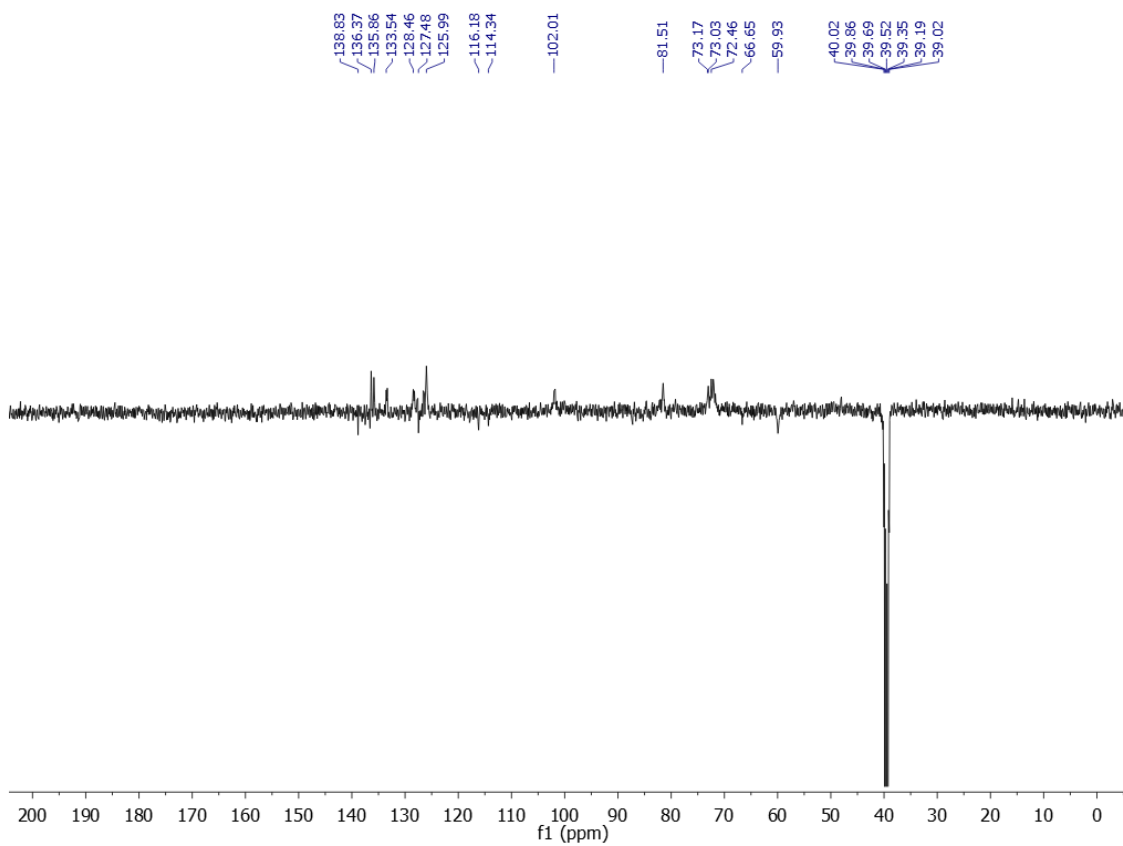


Fig. S8 APT NMR spectrum of compound 4.

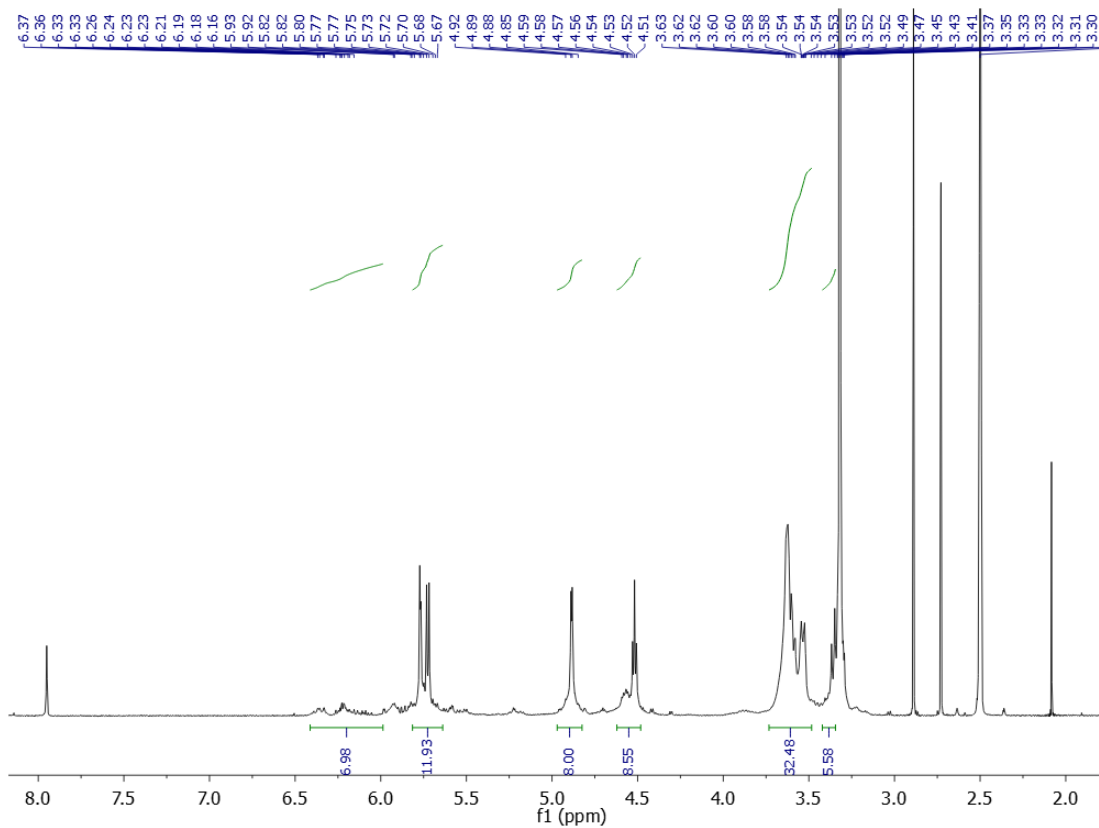


Fig. S9 ^1H NMR spectrum of compound **5**.

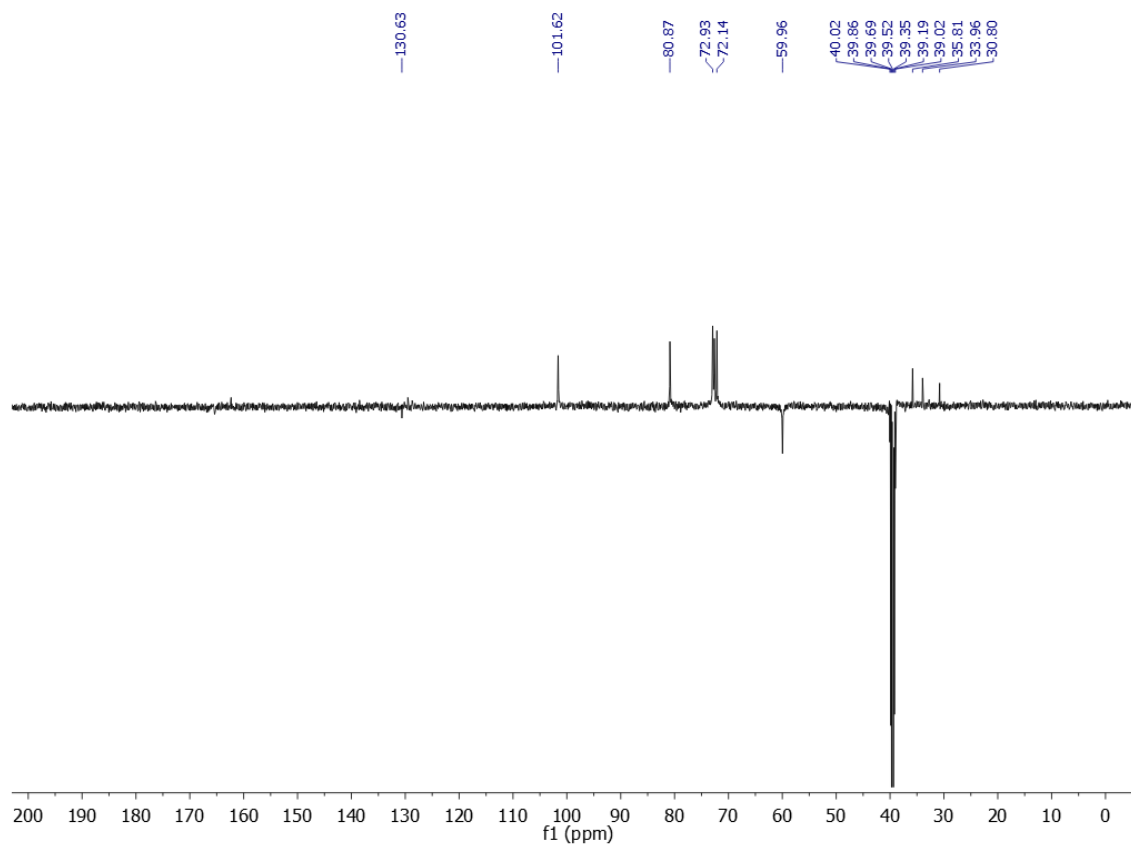


Fig. S10 APT NMR spectrum of compound **5**.

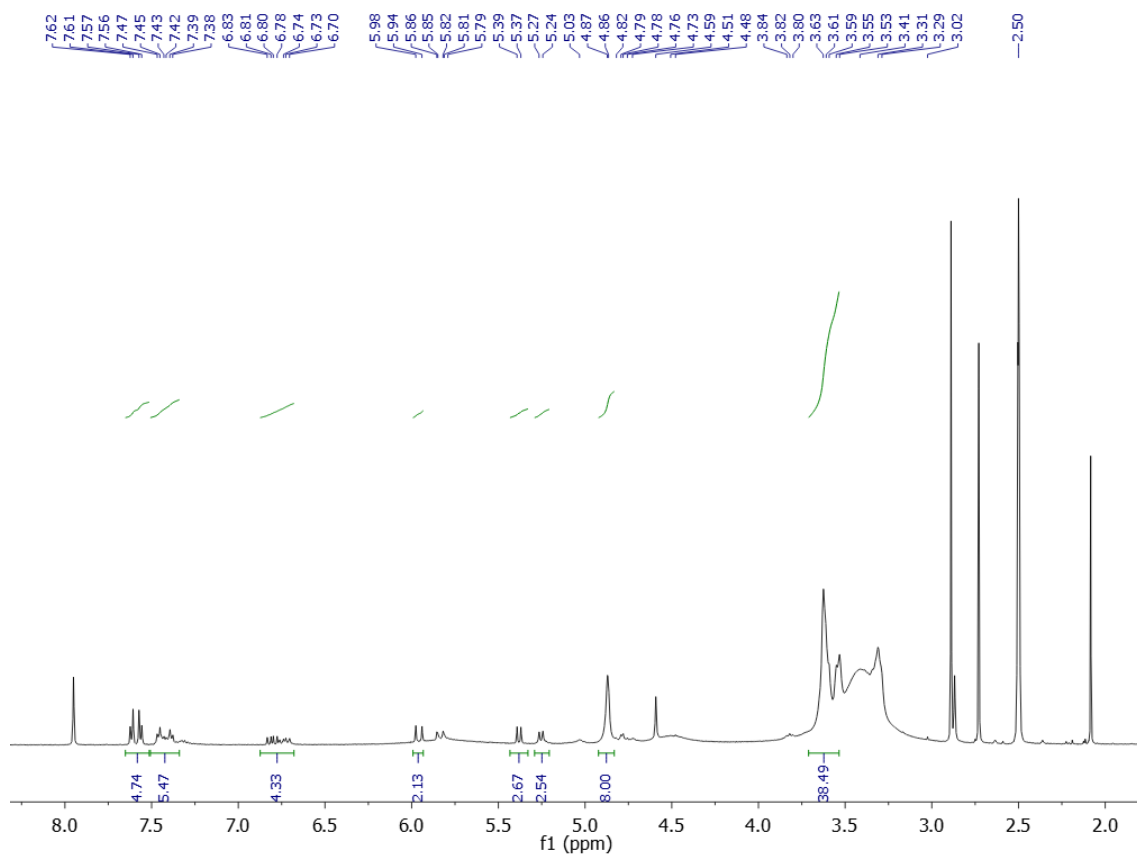


Fig. S11 ^1H NMR spectrum of compound **6**.

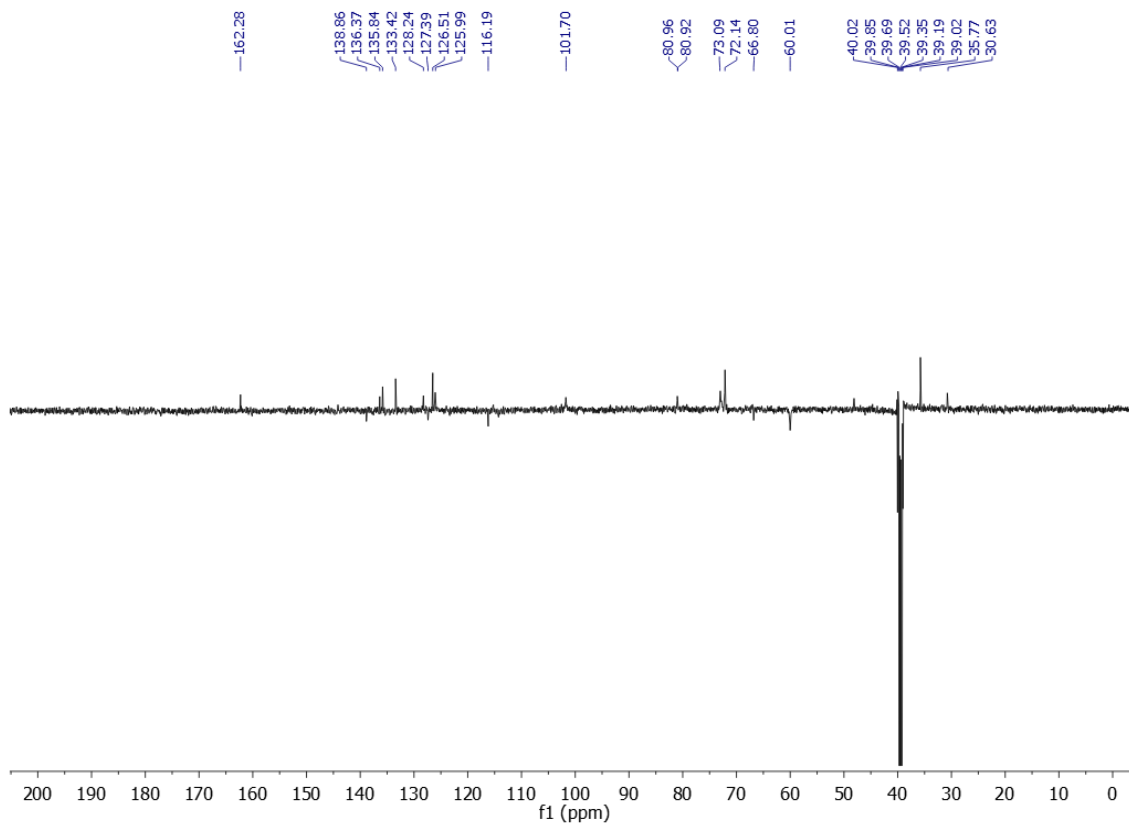


Fig. S12 APT NMR spectrum of compound **6**.

Enlarged portion of MALDI-TOF MS spectra registered in reflection and positive mode for samples 1–6.

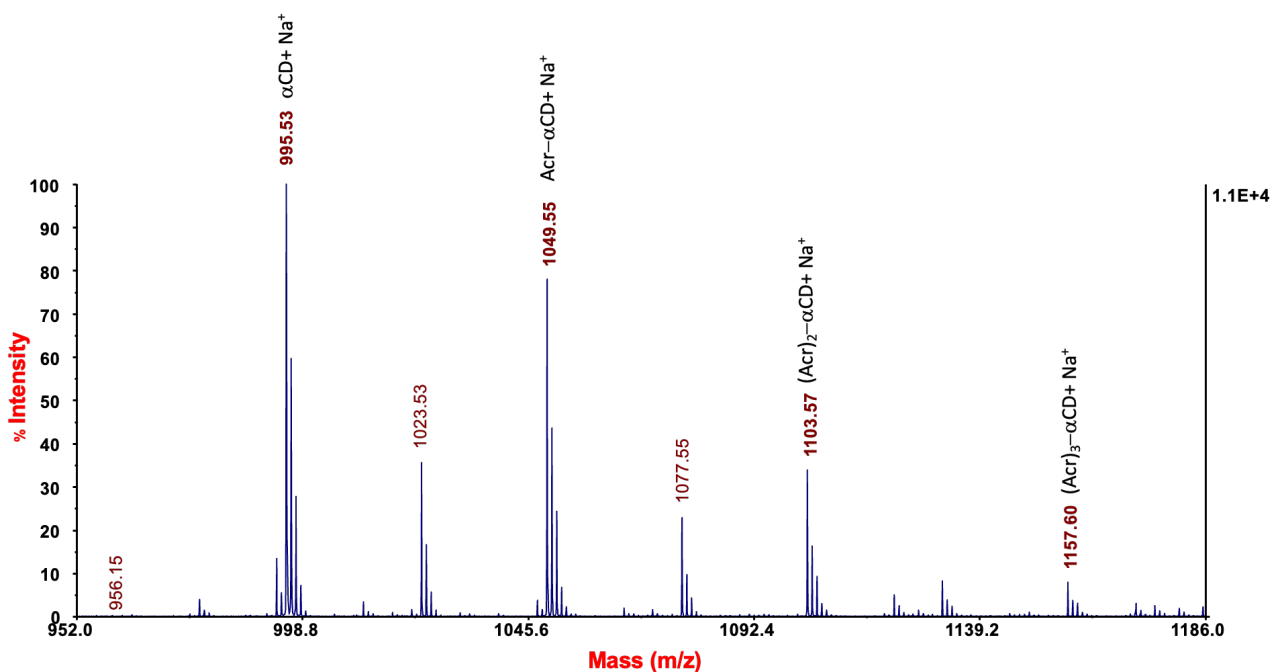


Fig. S13 MALDI-TOF MS spectrum of compound 1.

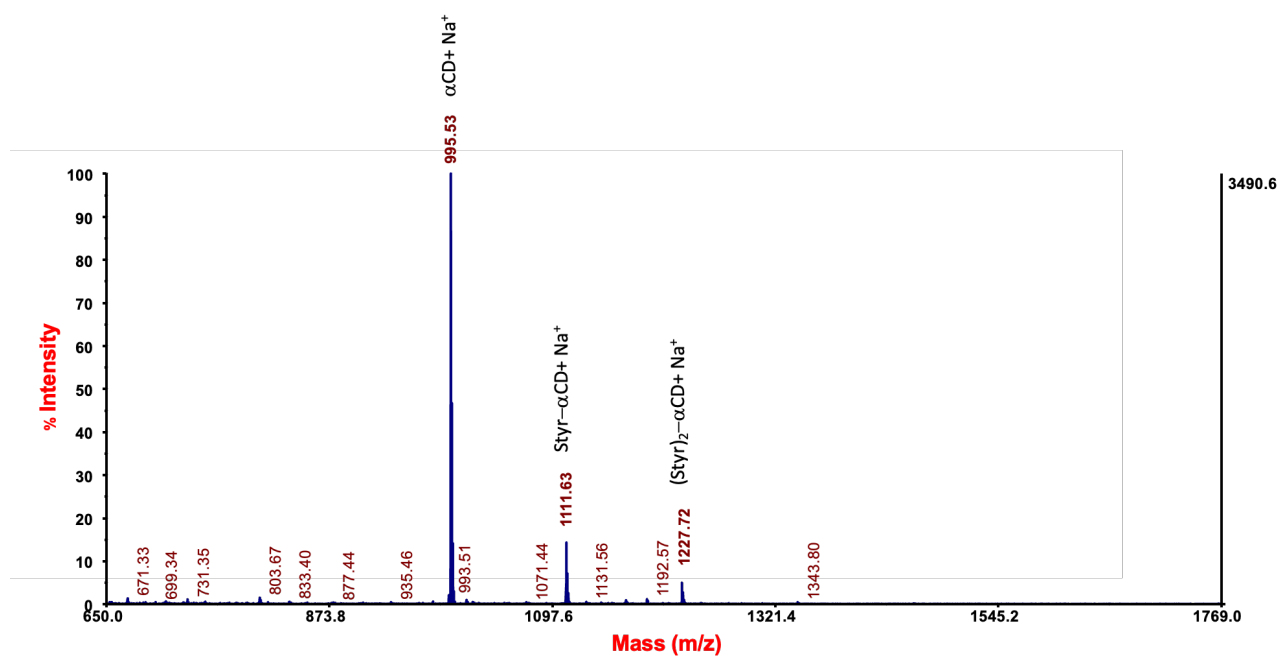


Fig. S14 MALDI-TOF MS spectrum of compound 2.

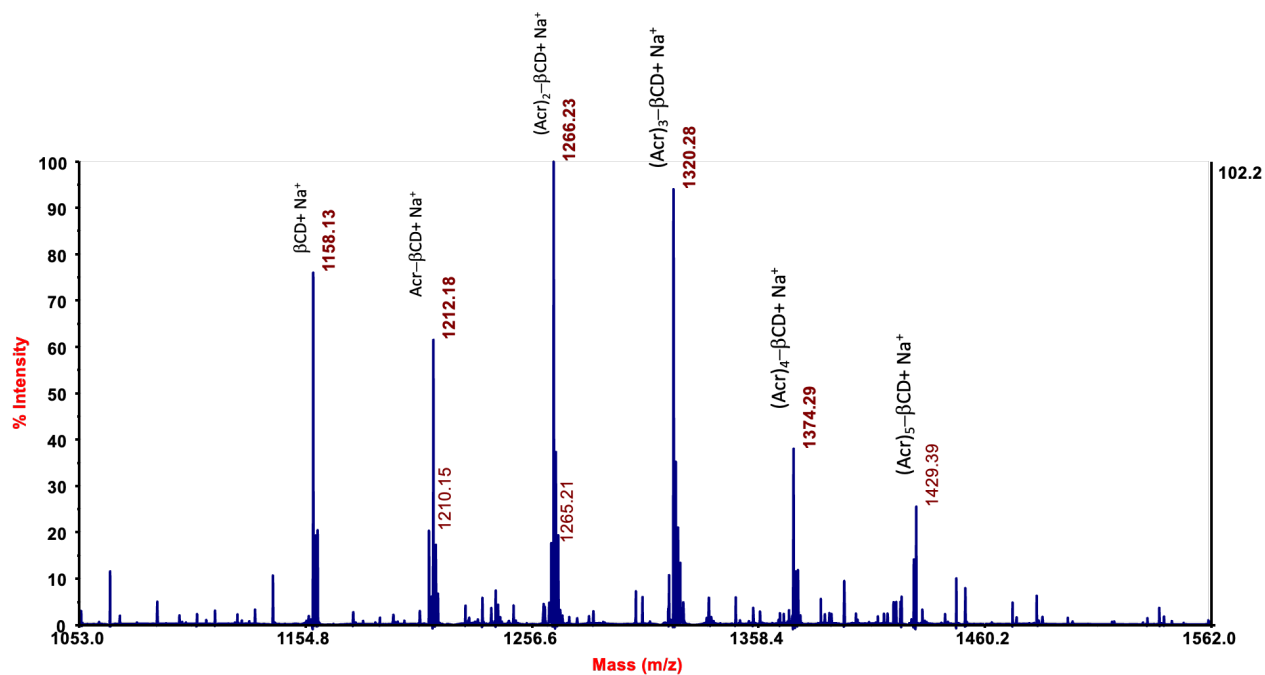


Fig. S15 MALDI-TOF MS spectrum of compound 3.

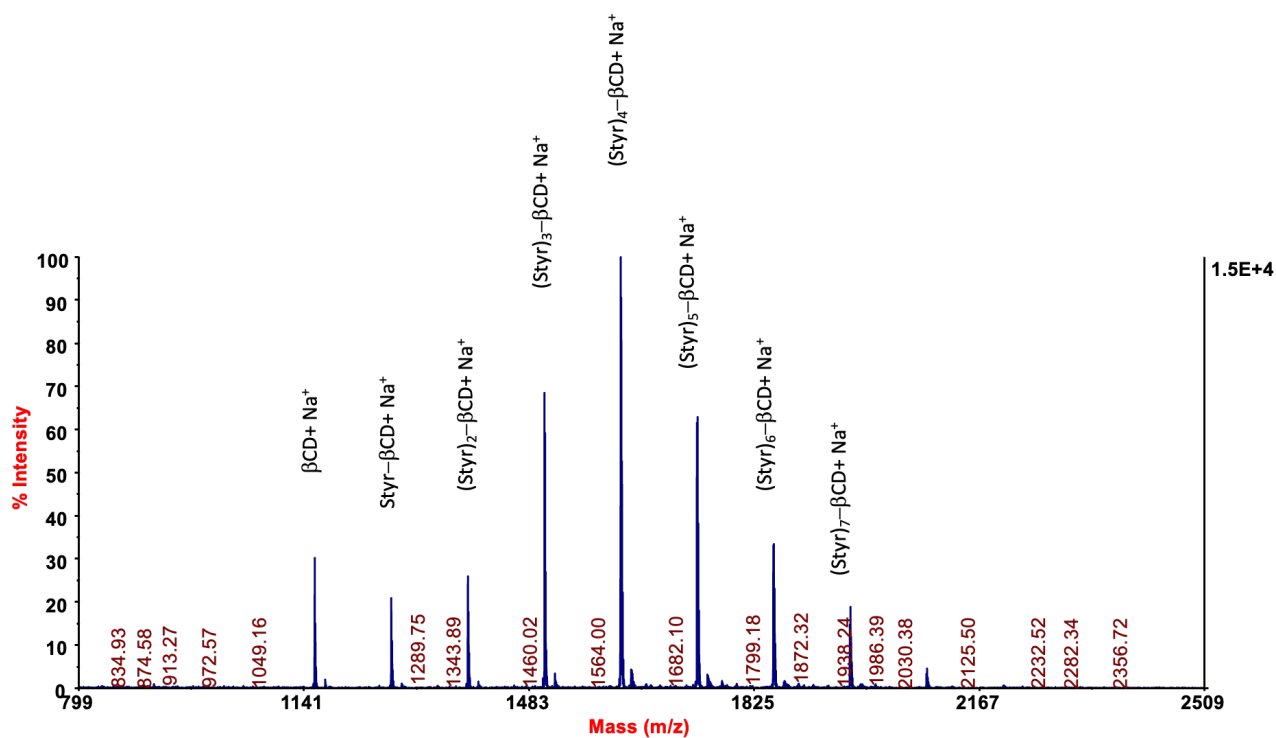


Fig. S16 MALDI-TOF MS spectrum of compound 4.

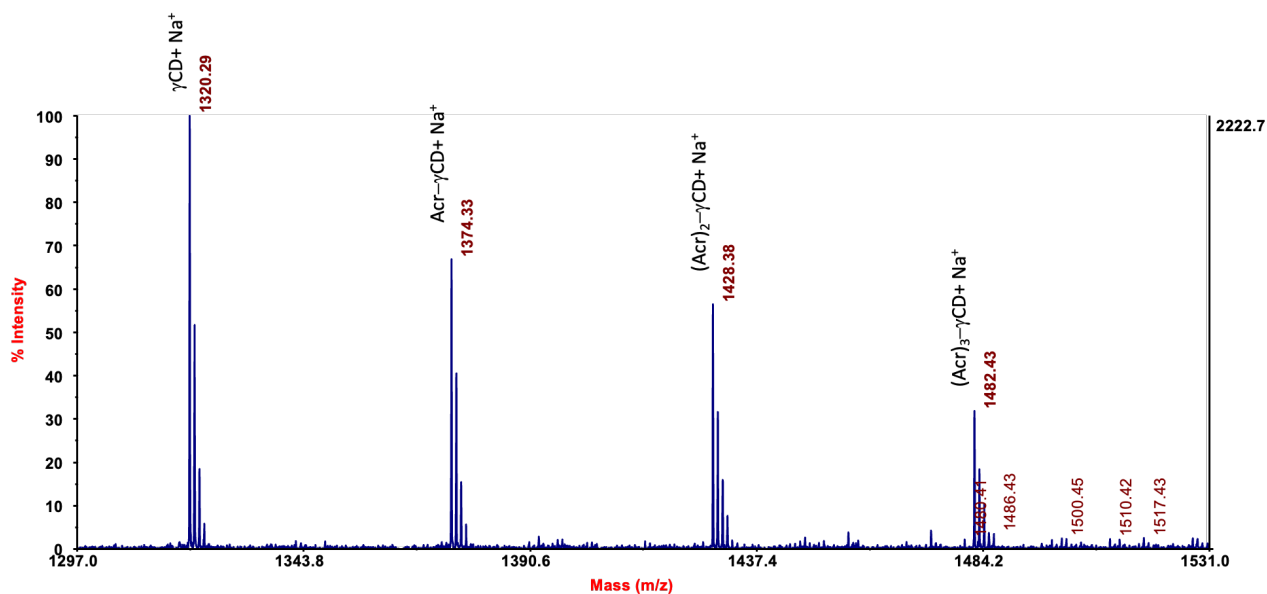


Fig. S17 MALDI-TOF MS spectrum of compound 5.

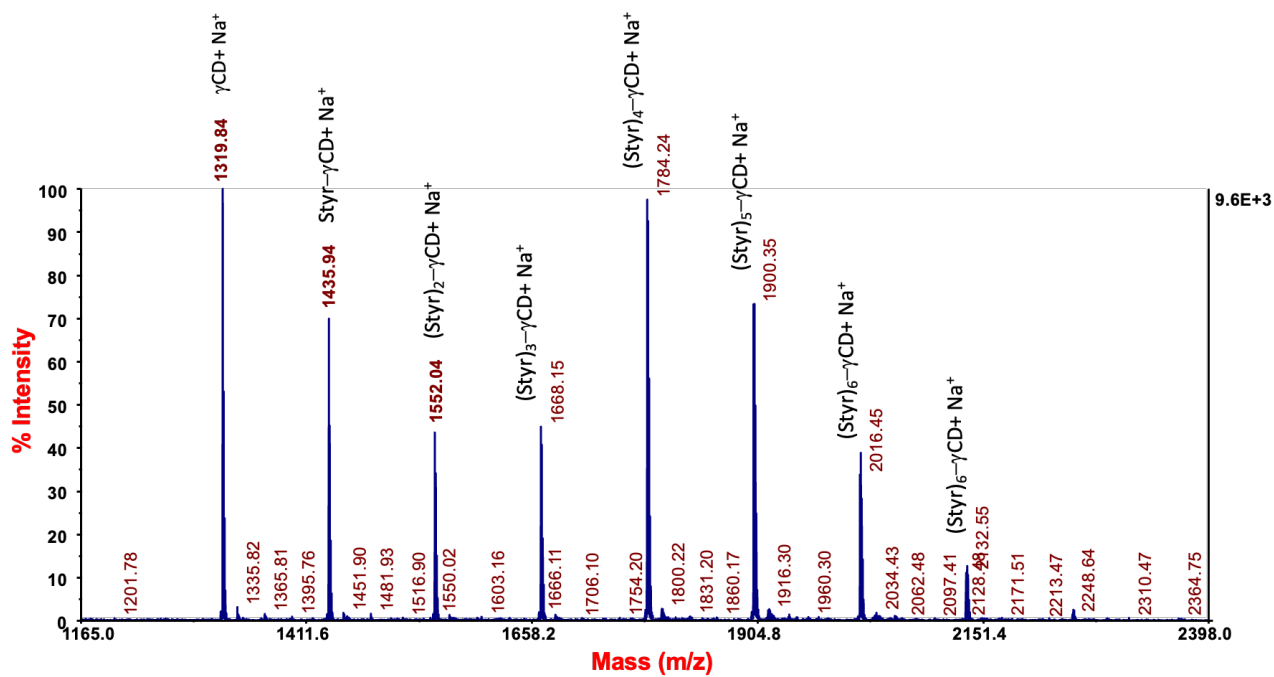


Fig. S18 MALDI-TOF MS spectrum of compound 6.

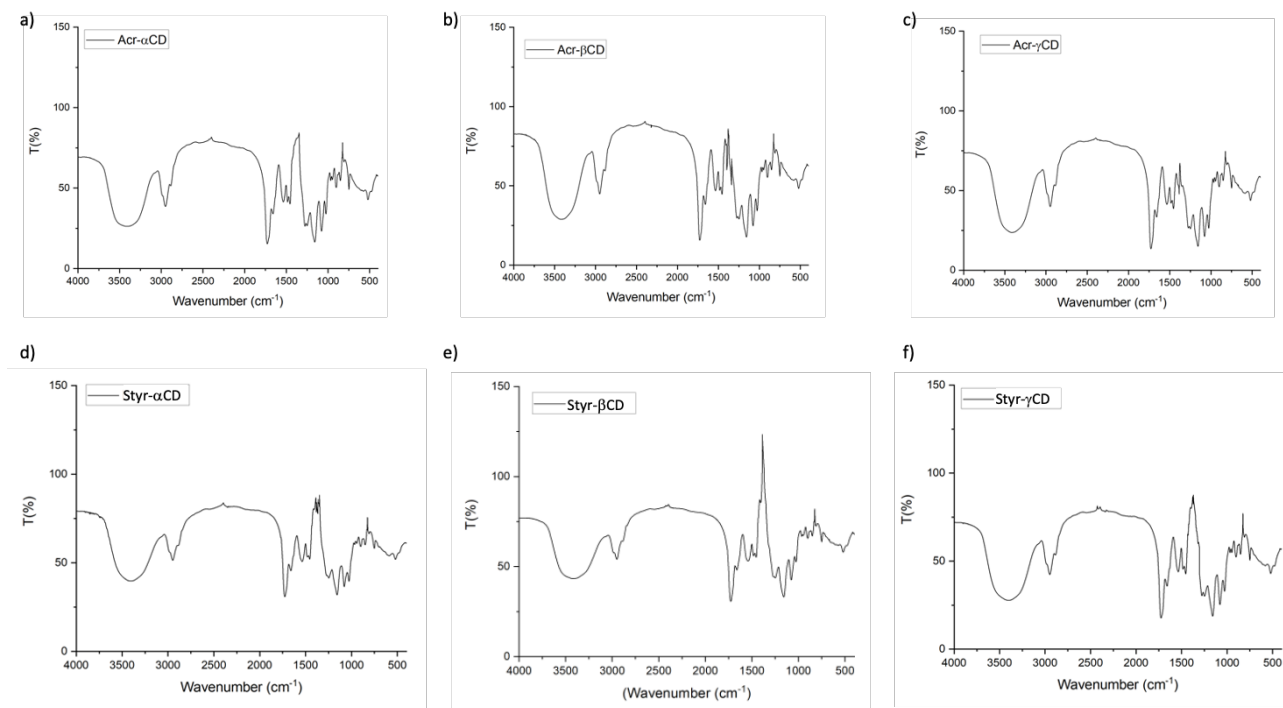


Fig. S19 FT-IR spectra of synthesized CD-HEMA cryogels.

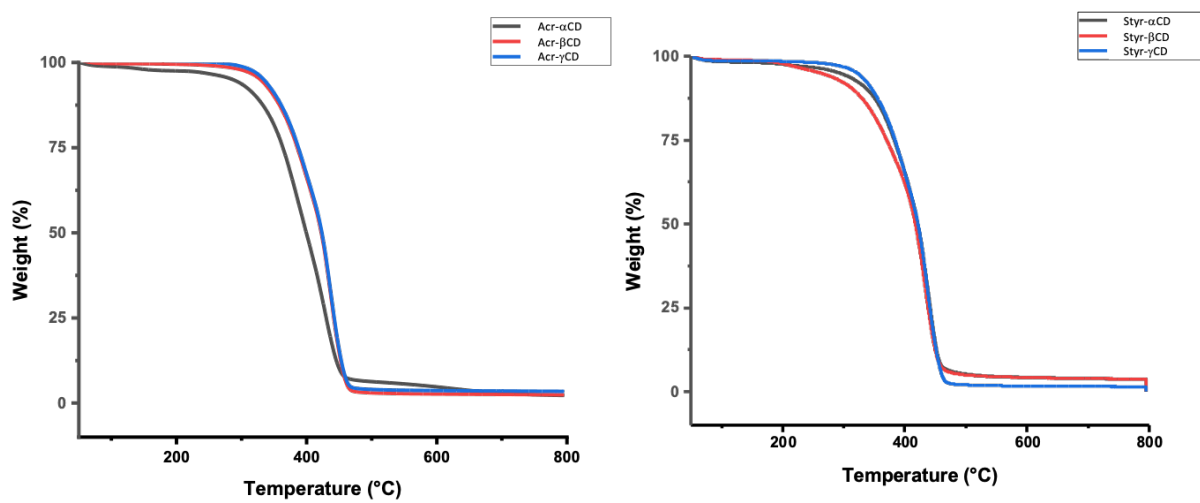


Fig. S20 TGA analysis of synthesized cryogels.

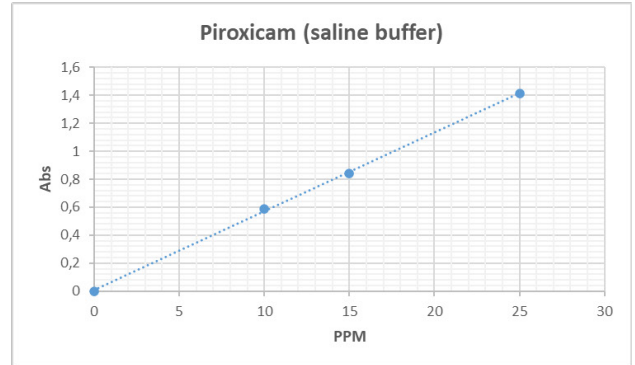
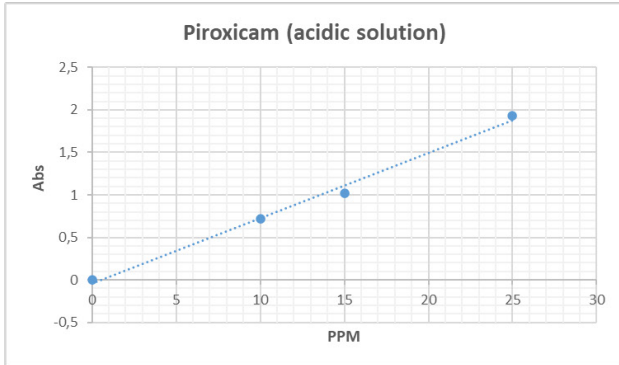
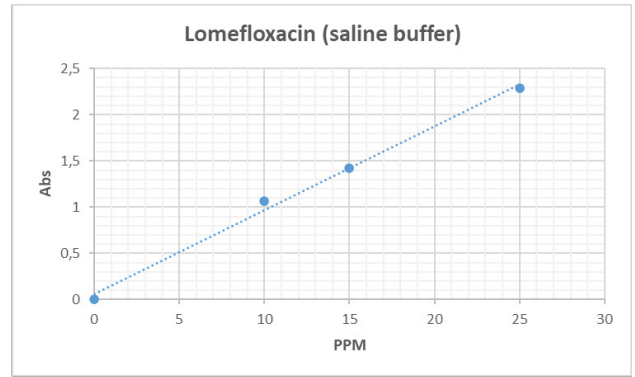
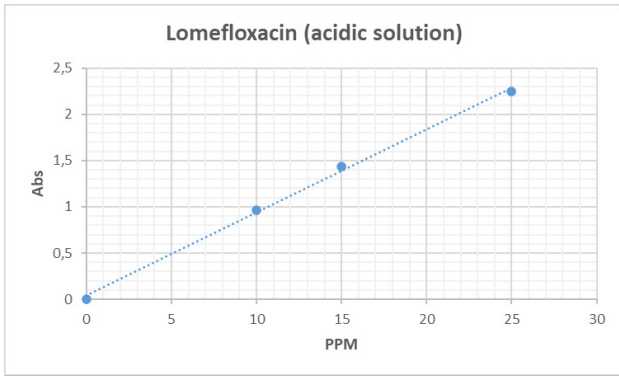


Fig. S21 Calibration line of LOM and PIR by UV-vis.

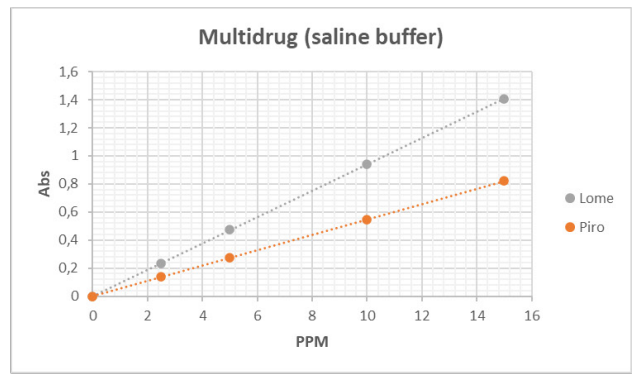
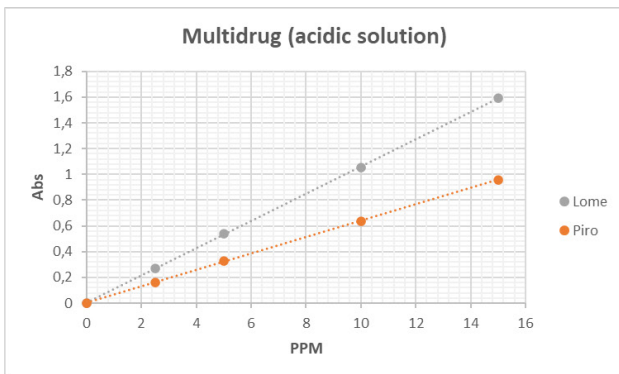
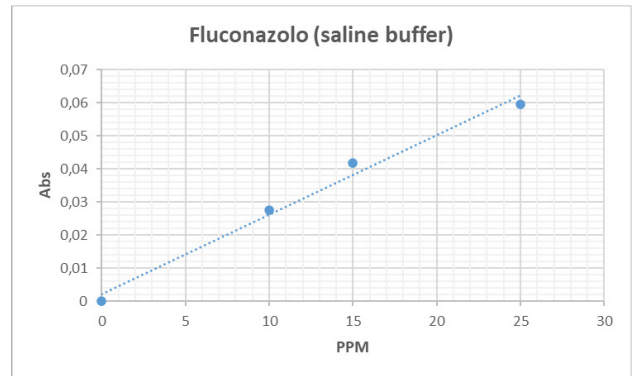
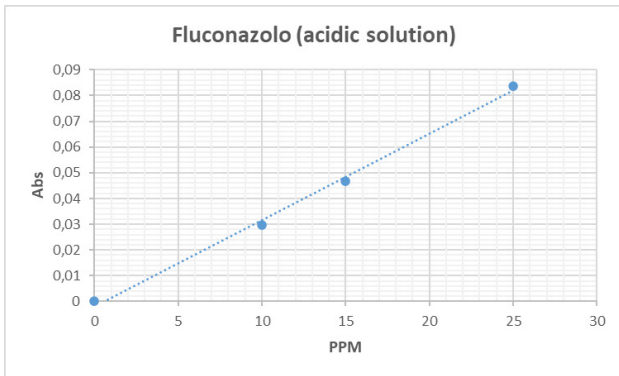


Fig. S22 Calibration line of FLU and multidrug by UV-vis.

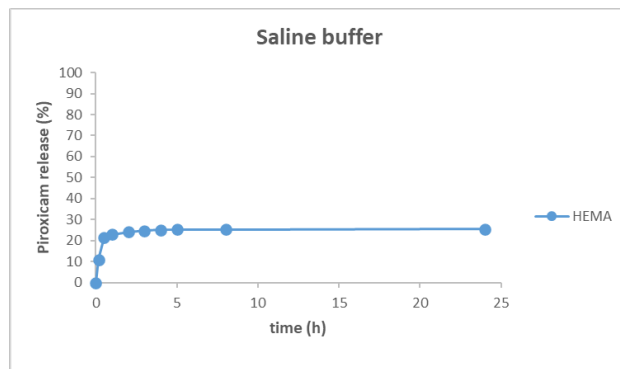
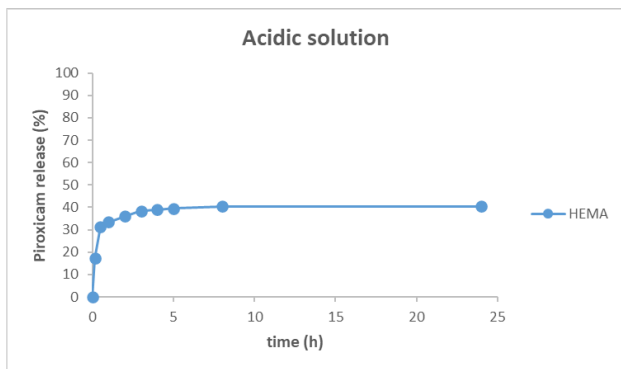
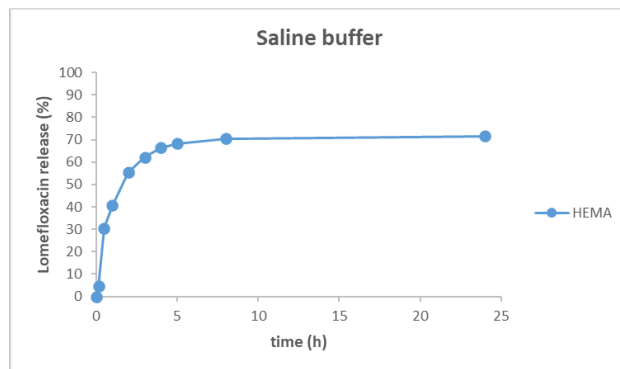
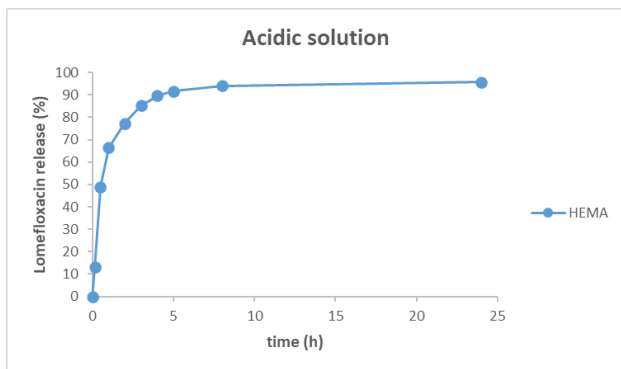


Fig. S23 *In vitro* release profiles of LOM and PIR from HEMA in media with pH a) 3 and b) 7.4 at 37 °C.

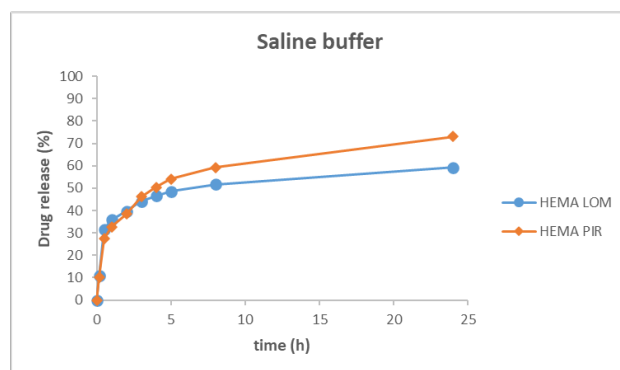
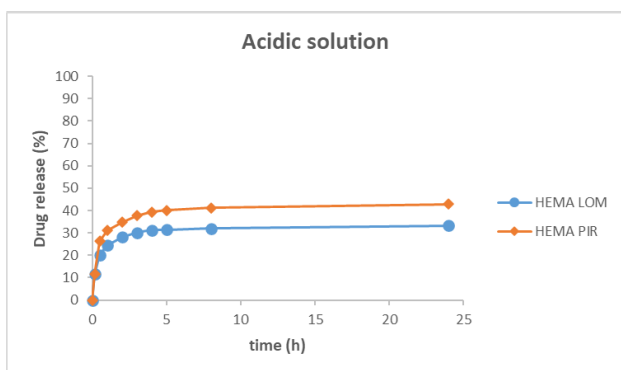
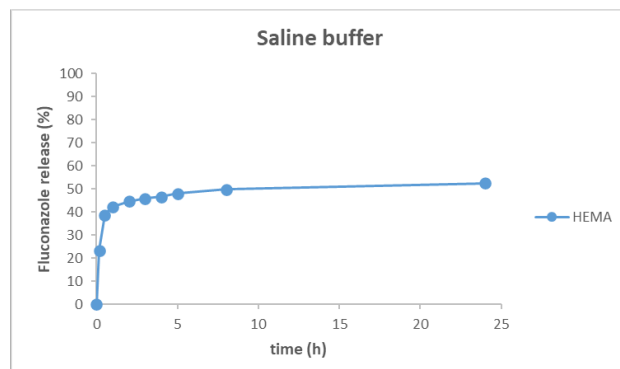
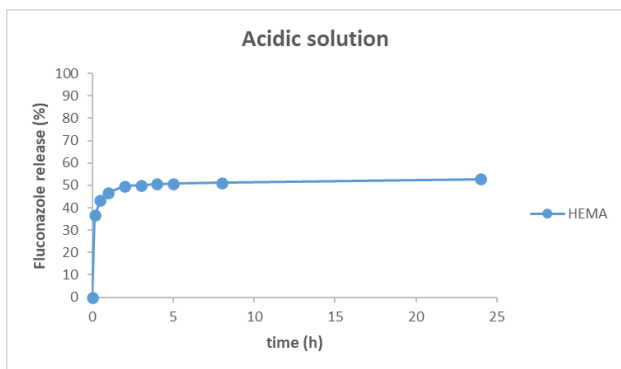


Fig. S24 *In vitro* release profiles of FLU and Multidrug from HEMA in media with pH a) 3 and b) 7.4 at 37 °C.

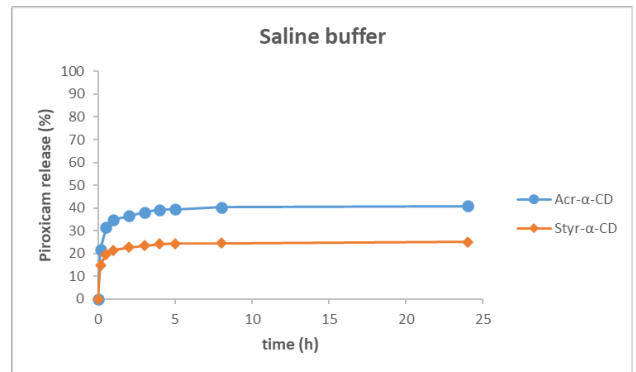
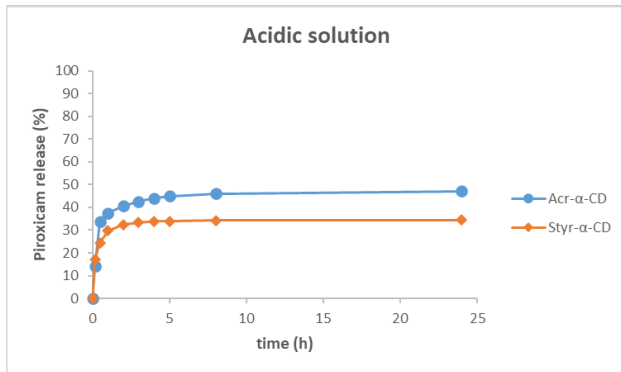
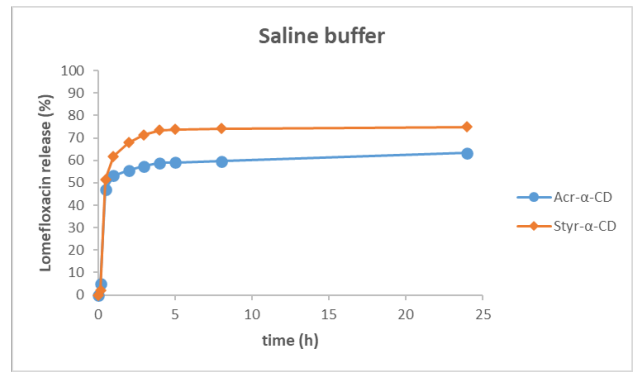
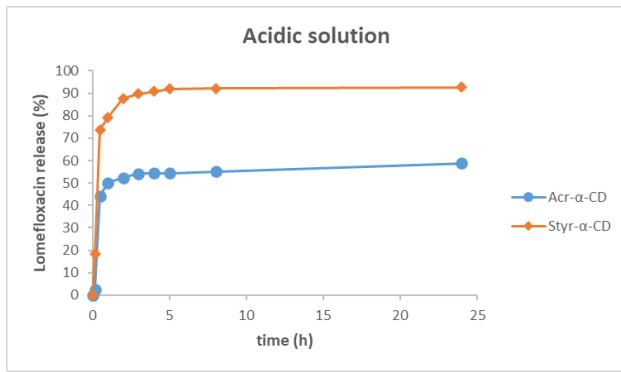


Fig. S25 *In vitro* release profiles of LOM and PIR from α -CD cryogels in media with pH a) 3 and b) 7.4 at 37 °C.

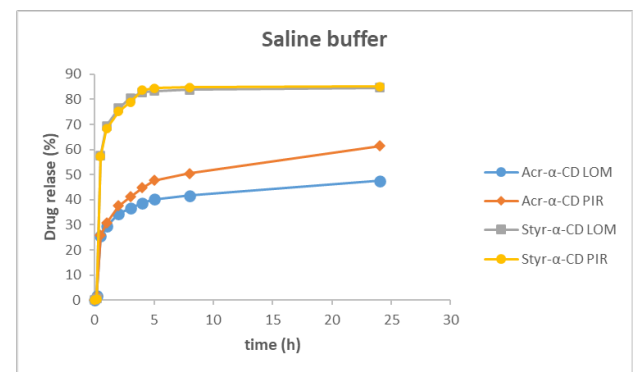
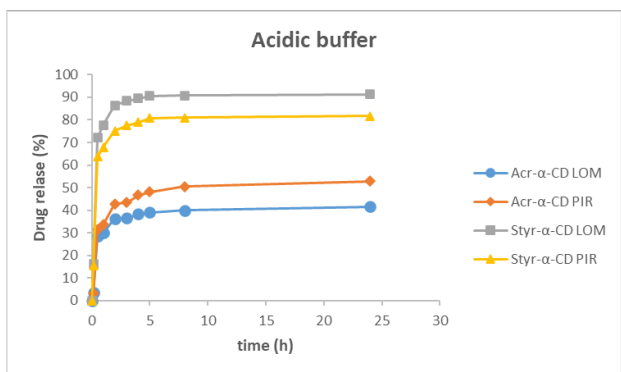
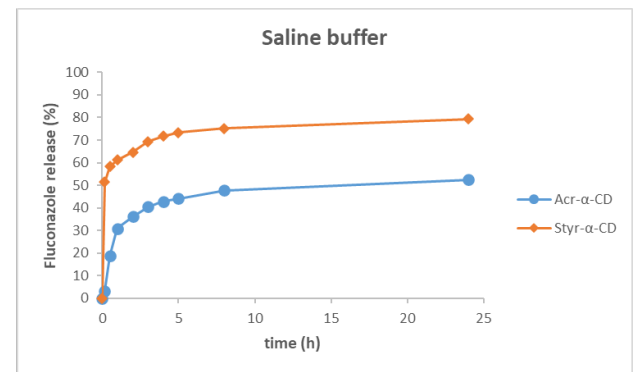
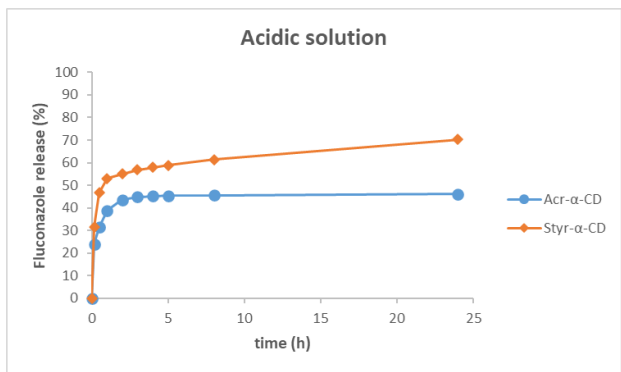


Fig. S26 *In vitro* release profiles of FLU and Multidrug from α -CD cryogels in media with pH a) 3 and b) 7.4 at 37 °C.

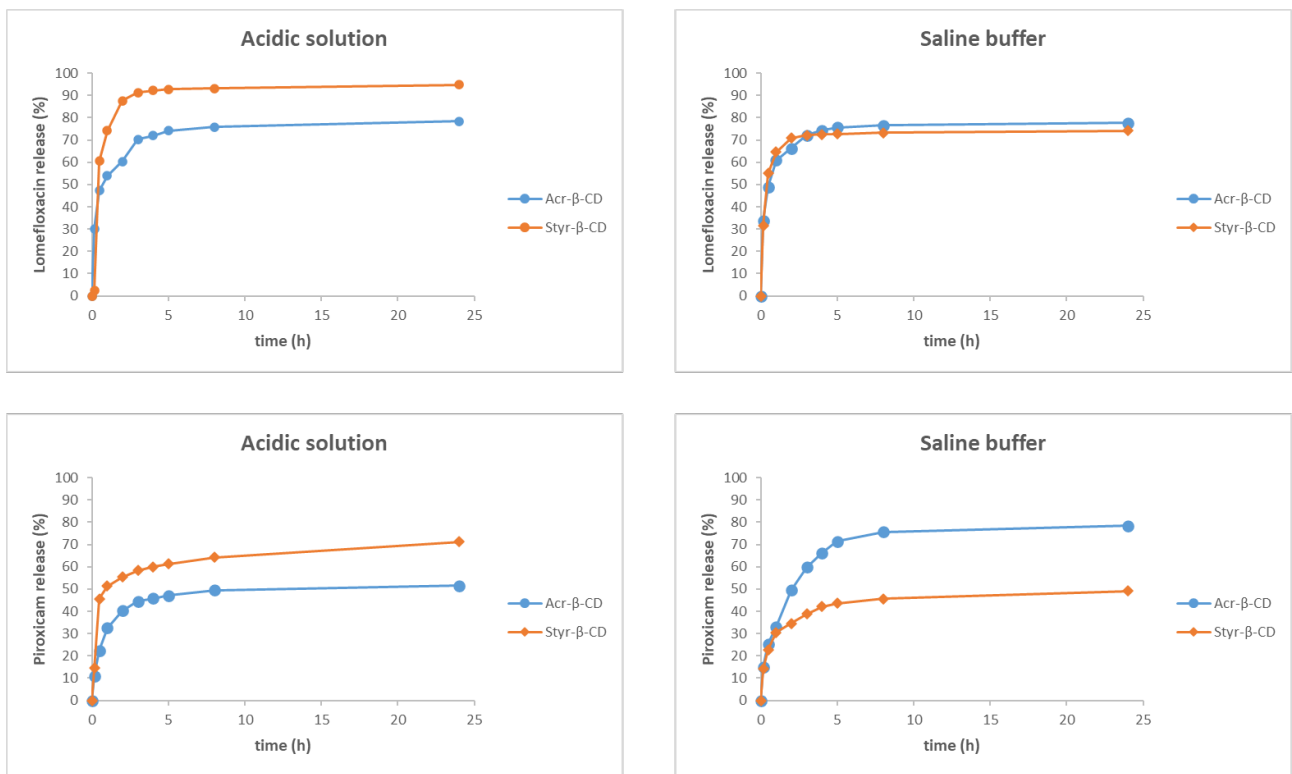


Fig. S27 *In vitro* release profiles of LOM and PIR from β -CD cryogels in media with pH a) 3 and b) 7.4 at 37 °C.

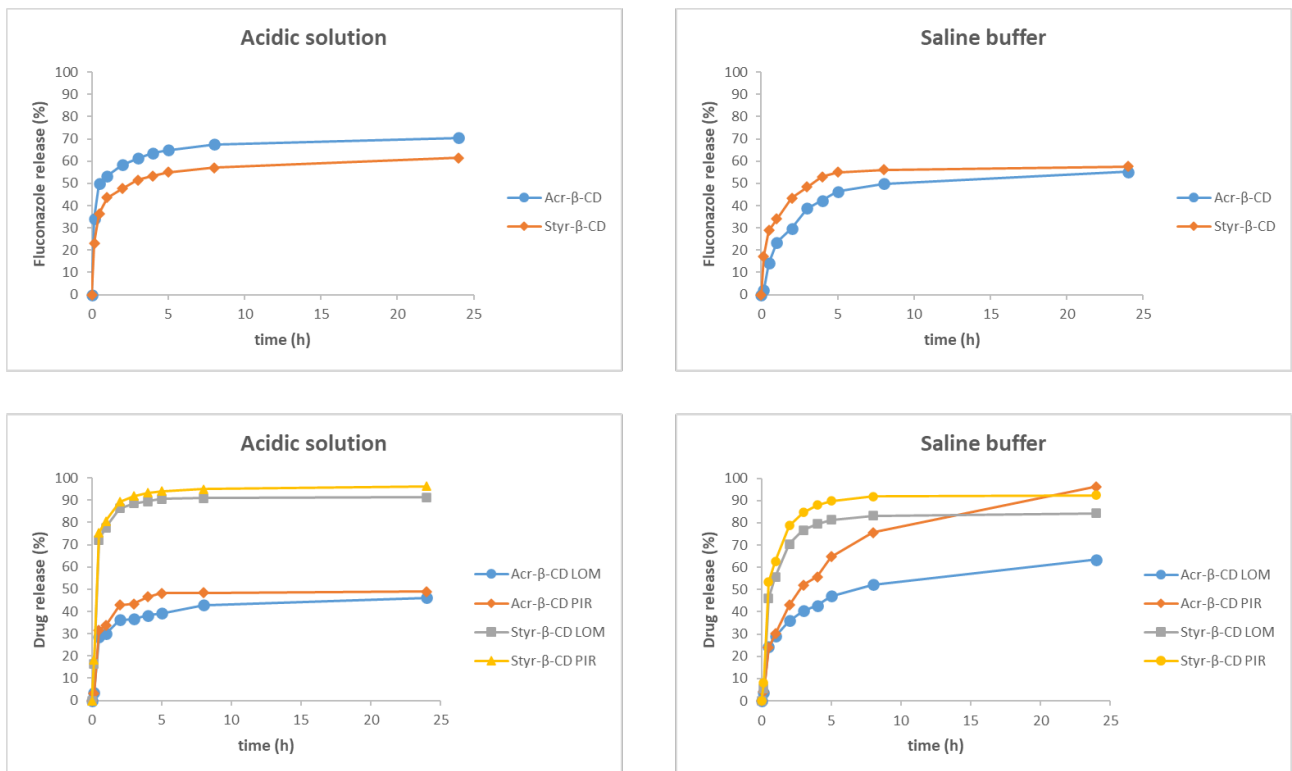


Fig. S28 *In vitro* release profiles of FLU and Multidrug from β -CD cryogels in media with pH a) 3 and b) 7.4 at 37 °C.

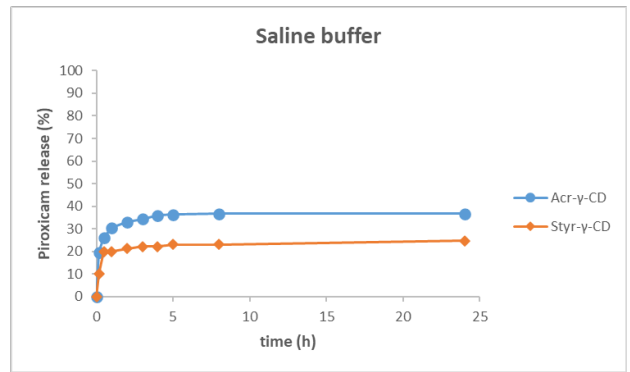
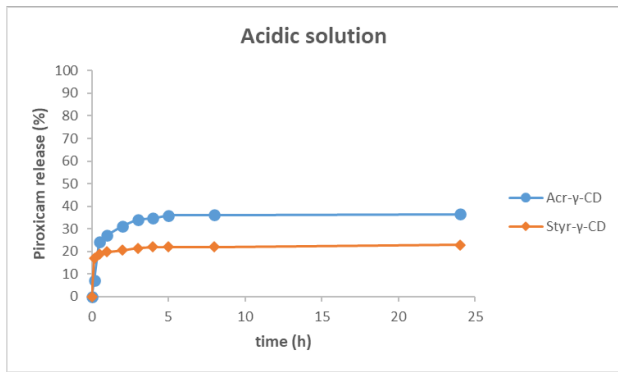
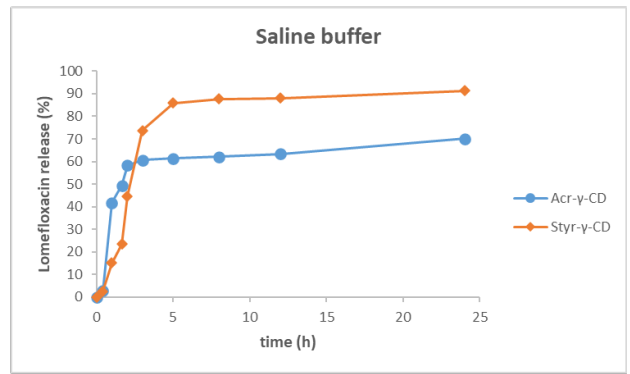
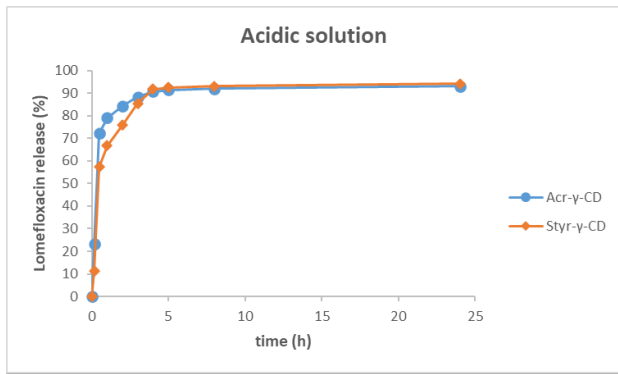


Fig. S29 *In vitro* release profiles of LOM and PIR from γ -CD cryogels in media with pH a) 3 and b) 7.4 at 37 °C.

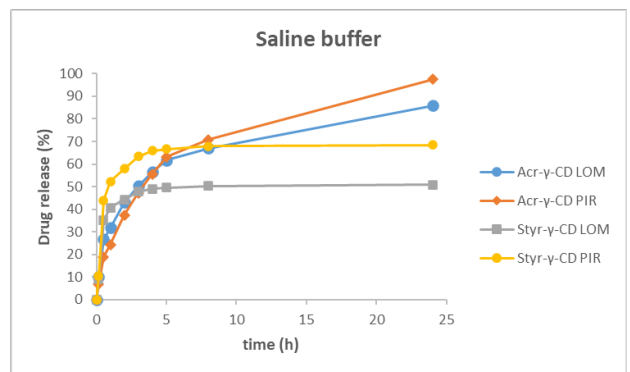
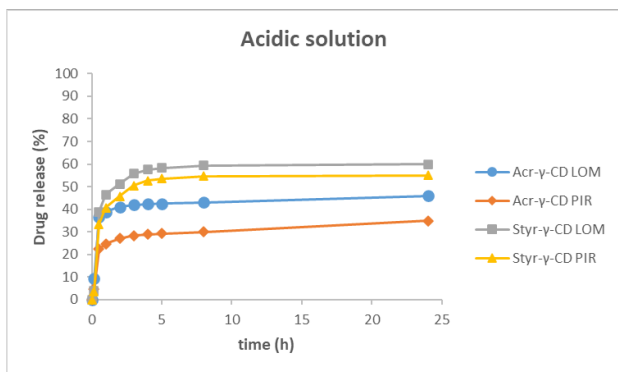
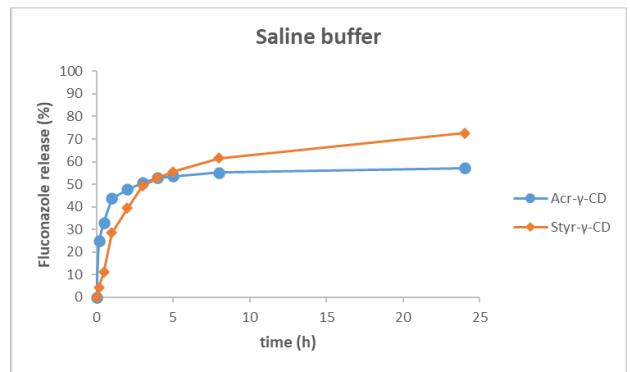
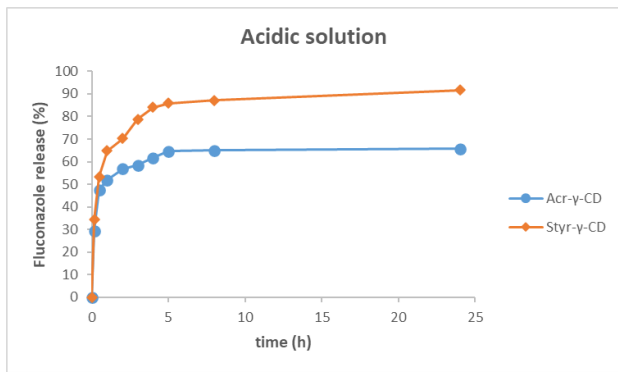


Fig. S30 *In vitro* release profiles of FLU and Multidrug from γ -CD cryogels in media with pH a) 3 and b) 7.4 at 37 °C.



Fig. S31 Pictures of a patch sample.

Table S1 Kinetic release parameters for Lomefloxacin from cryogel samples at pH 3 and 7.4

		Lomefloxacin											
Samples	buffer	Zero Order		First Order		Higuchi		Korsmeyer-Peppas			Weibull		
		K	R ²	K	R ²	K	R ²	K	n	R ²	a	b	R ²
Hema	Acidic	0.587	0.879	0.017	0.983	7.034	0.966	10.269	0.419	0.972	0.042	0.762	0.988
	Saline	0.413	0.924	0.007	0.968	4.844	0.978	4.335	0.524	0.978	0.027	0.709	0.985
Acr- α -CD	Acidic	0.397	0.763	0.007	0.843	4.851	0.881	9.120	0.365	0.898	0.067	0.508	0.910
	Saline	0.421	0.762	0.008	0.852	5.161	0.884	10.530	0.347	0.906	0.077	0.500	0.918
Styr- α -CD	Acidic	0.658	0.776	0.031	0.977	8.101	0.906	19.506	0.312	0.936	0.043	0.900	0.974
	Saline	0.511	0.806	0.012	0.918	6.168	0.908	9.490	0.408	0.917	0.050	0.664	0.937
Acr- β -CD	Acidic	0.484	0.832	0.011	0.914	5.944	0.952	18.144	0.260	0.996	0.158	0.386	0.997
	Saline	0.514	0.808	0.014	0.921	6.354	0.941	21.118	0.241	0.996	0.181	0.382	0.998
Styr- β -CD	Acidic	0.647	0.838	0.022	0.971	7.747	0.928	10.359	0.438	0.933	0.014	1.134	0.974
	Saline	0.532	0.776	0.017	0.929	6.615	0.923	22.514	0.236	0.984	0.182	0.399	0.990
Acr- γ -CD	Acidic	0.645	0.771	0.032	0.979	7.973	0.907	21.583	0.286	0.947	0.082	0.703	0.973
	Saline	0.431	0.830	0.008	0.907	5.181	0.926	7.504	0.421	0.932	0.049	0.600	0.945
Styr- γ -CD	Acidic	0.591	0.848	0.018	0.967	5.181	0.926	11.817	0.392	0.955	0.052	0.723	0.972
	Saline	0.399	0.997	0.006	0.984	4.377	0.954	0.354	1.024	0.997	0.001	1.345	0.992

Table S2 Kinetic release parameters for Piroxicam from cryogel samples at pH 3 and 7.4

		Piroxicam											
Samples	buffer	Zero Order		First Order		Higuchi		Korsmeyer-Peppas			Weibull		
		K	R ²	K	R ²	K	R ²	K	n	R ²	a	b	R ²
Hema	Acidic	0.280	0.755	0.004	0.800	3.494	0.906	13.076	0.215	0.980	0.130	0.264	0.982
	Saline	0.185	0.725	0.002	0.753	2.321	0.886	9.055	0.207	0.969	0.091	0.235	0.970
Acr- α -CD	Acidic	0.323	0.778	0.005	0.834	4.001	0.918	11.852	0.267	0.965	0.109	0.341	0.969
	Saline	0.282	0.716	0.004	0.763	3.560	0.882	16.543	0.168	0.991	0.172	0.207	0.992
Styr- α -CD	Acidic	0.246	0.773	0.003	0.811	3.071	0.921	11.599	0.213	0.994	0.116	0.253	0.995
	Saline	0.175	0.692	0.002	0.717	2.215	0.864	11.530	0.142	0.996	0.120	0.160	0.996
Acr- β -CD	Acidic	0.337	0.908	0.005	0.948	4.025	0.987	6.067	0.412	0.992	0.048	0.520	0.995
	Saline	0.456	0.958	0.008	0.986	5.345	0.999	5.556	0.492	0.999	0.035	0.677	0.997
Styr- β -CD	Acidic	0.423	0.788	0.008	0.875	5.209	0.918	13.143	0.301	0.952	0.106	0.431	0.960
	Saline	0.268	0.865	0.004	0.898	3.260	0.971	7.697	0.316	0.995	0.071	0.376	0.996
Acr- γ -CD	Acidic	0.239	0.834	0.003	0.866	2.912	0.944	5.986	0.346	0.963	0.054	0.405	0.966
	Saline	0.252	0.743	0.003	0.782	3.162	0.900	13.848	0.181	0.996	0.142	0.216	0.997
Styr- γ -CD	Acidic	0.161	0.609	0.002	0.630	2.059	0.793	14.445	0.076	1.000	0.155	0.084	1.000
	Saline	0.164	0.713	0.002	0.737	2.066	0.876	8.445	0.196	0.966	0.085	0.219	0.967

Table S3 Kinetic release parameters for Fluconazole from cryogel samples at pH 3 and 7.4

Samples	buffer	Fluconazole											
		Zero Order		First Order		Higuchi		Korsmeyer-Peppas			Weibull		
		K	R ²	K	R ²	K	R ²	K	n	R ²	a	b	R ²
Hema	Acidic	0.379	0.647	0.007	0.724	4.830	0.828	29.604	0.106	0.999	0.337	0.146	0.999
	Saline	0.342	0.723	0.006	0.789	4.299	0.887	18.305	0.187	0.983	0.185	0.246	0.985
Acr- α -CD	Acidic	0.437	0.783	0.009	0.871	5.435	0.926	20.387	0.215	0.997	0.195	0.308	0.998
	Saline	0.274	0.904	0.004	0.935	3.229	0.969	3.264	0.498	0.969	0.026	0.595	0.974
Styr- α -CD	Acidic	0.423	0.716	0.009	0.813	5.331	0.883	24.168	0.173	0.989	0.245	0.251	0.991
	Saline	0.544	0.650	0.026	0.851	6.923	0.824	43.940	0.098	1.000	0.536	0.171	1.000
Acr- β -CD	Acidic	0.449	0.731	0.010	0.832	5.642	0.891	25.421	0.174	0.993	0.257	0.259	0.995
	Saline	0.241	0.955	0.003	0.971	2.778	0.983	1.600	0.617	0.985	0.012	0.711	0.987
Styr- β -CD	Acidic	0.369	0.801	0.006	0.863	4.562	0.937	15.132	0.242	0.993	0.143	0.320	0.995
	Saline	0.330	0.883	0.005	0.922	3.998	0.979	8.820	0.330	0.998	0.078	0.412	0.999
Acr- γ -CD	Acidic	0.432	0.746	0.009	0.842	5.412	0.902	21.822	0.199	0.987	0.211	0.289	0.990
	Saline	0.428	0.805	0.008	0.885	5.299	0.939	17.788	0.239	0.995	0.164	0.337	0.996
Styr- γ -CD	Acidic	0.554	0.817	0.017	0.944	6.828	0.945	21.552	0.252	0.995	0.171	0.425	0.997
	Saline	0.305	0.972	0.004	0.988	3.467	0.981	1.375	0.695	0.989	0.009	0.846	0.992

Table S4 Kinetic release parameters for Lomefloxacin in multidrug formulation from cryogel samples at pH 3 and 7.4

Samples	buffer	Lomefloxacin in multidrug											
		Zero Order		First Order		Higuchi		Korsmeyer-Peppas			Weibull		
		K	R ²	K	R ²	K	R ²	K	n	R ²	a	b	R ²
Hema	Acidic	0.213	0.833	0.003	0.861	2.616	0.955	7.153	0.284	0.992	0.069	0.326	0.993
	Saline	0.310	0.828	0.005	0.873	3.781	0.943	8.516	0.326	0.967	0.075	0.406	0.971
Acr- α -CD	Acidic	0.265	0.804	0.004	0.844	3.221	0.913	5.780	0.375	0.927	0.050	0.451	0.932
	Saline	0.258	0.831	0.003	0.866	3.100	0.926	4.527	0.419	0.932	0.038	0.499	0.938
Styr- α -CD	Acidic	0.647	0.778	0.029	0.973	7.955	0.905	18.337	0.321	0.933	0.048	0.847	0.968
	Saline	0.575	0.806	0.017	0.942	6.936	0.906	10.244	0.417	0.914	0.038	0.790	0.943
Acr- β -CD	Acidic	0.265	0.804	0.004	0.844	3.221	0.913	5.782	0.375	0.927	0.050	0.451	0.932
	Saline	0.274	0.882	0.004	0.914	3.264	0.960	4.190	0.447	0.963	0.035	0.534	0.967
Styr- β -CD	Acidic	0.647	0.779	0.029	0.973	7.954	0.905	18.337	0.321	0.933	0.048	0.846	0.968
	Saline	0.526	0.879	0.012	0.962	6.255	0.957	7.641	0.457	0.959	0.037	0.732	0.973
Acr- γ -CD	Acidic	0.311	0.744	0.005	0.802	3.862	0.885	10.442	0.287	0.926	0.094	0.365	0.931
	Saline	0.331	0.924	0.005	0.955	3.928	0.989	5.110	0.444	0.991	0.040	0.551	0.993
Styr- γ -CD	Acidic	0.261	0.824	0.004	0.861	3.154	0.924	5.012	0.401	0.934	0.043	0.479	0.939
	Saline	0.340	0.812	0.005	0.868	4.152	0.928	8.758	0.340	0.950	0.073	0.439	0.956

Table S5 Kinetic release parameters for Piroxicam in multidrug formulation from cryogel samples at pH 3 and 7.4

		Piroxicam in multidrug											
Samples	buffer	Zero Order		First Order		Higuchi		Korsmeyer-Peppas			Weibull		
		K	R ²	K	R ²	K	R ²	K	n	R ²	a	b	R ²
Hema	Acidic	0.267	0.829	0.004	0.867	3.269	0.950	8.117	0.305	0.980	0.075	0.366	0.982
	Saline	0.393	0.890	0.007	0.938	4.711	0.975	7.958	0.388	0.984	0.062	0.514	0.987
Acr- α -CD	Acidic	0.310	0.828	0.005	0.875	3.737	0.926	5.739	0.408	0.934	0.046	0.509	0.940
	Saline	0.283	0.864	0.004	0.900	3.370	0.945	4.143	0.456	0.947	0.033	0.551	0.953
Styr- α -CD	Acidic	0.566	0.776	0.020	0.942	6.967	0.905	16.776	0.312	0.936	0.095	0.578	0.954
	Saline	0.565	0.802	0.016	0.936	6.814	0.903	10.143	0.415	0.911	0.041	0.765	0.938
Acr- β -CD	Acidic	0.310	0.828	0.005	0.875	3.736	0.925	5.736	0.408	0.934	0.046	0.509	0.940
	Saline	0.332	0.945	0.005	0.971	3.865	0.985	2.911	0.560	0.985	0.020	0.694	0.988
Styr- β -CD	Acidic	0.671	0.776	0.033	0.978	8.262	0.905	19.815	0.313	0.935	0.026	1.072	0.980
	Saline	0.586	0.869	0.016	0.972	7.005	0.953	9.519	0.435	0.957	0.037	0.790	0.976
Acr- γ -CD	Acidic	0.206	0.788	0.003	0.818	2.518	0.910	5.444	0.335	0.934	0.050	0.385	0.937
	Saline	0.293	0.970	0.004	0.985	3.387	0.995	2.304	0.582	0.997	0.017	0.694	0.997
Styr- γ -CD	Acidic	0.340	0.842	0.005	0.892	4.084	0.935	5.992	0.418	0.942	0.046	0.535	0.949
	Saline	0.446	0.831	0.009	0.913	5.409	0.939	10.176	0.365	0.954	0.072	0.529	0.964