

Hyperbranched Polyelectrolyte Copolymers as Novel Candidate Delivery Systems for Bio-Relevant Compounds

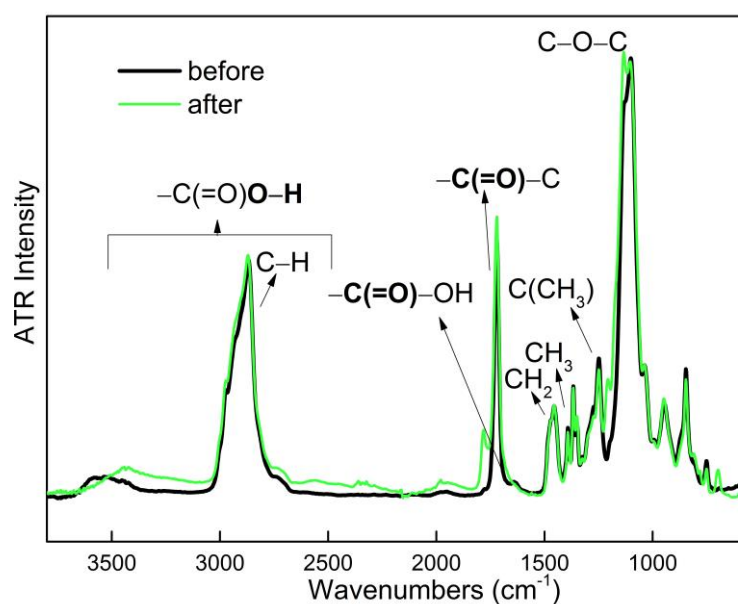


Figure S1. FT-IR spectra of HC 1 before and after hydrolysis.

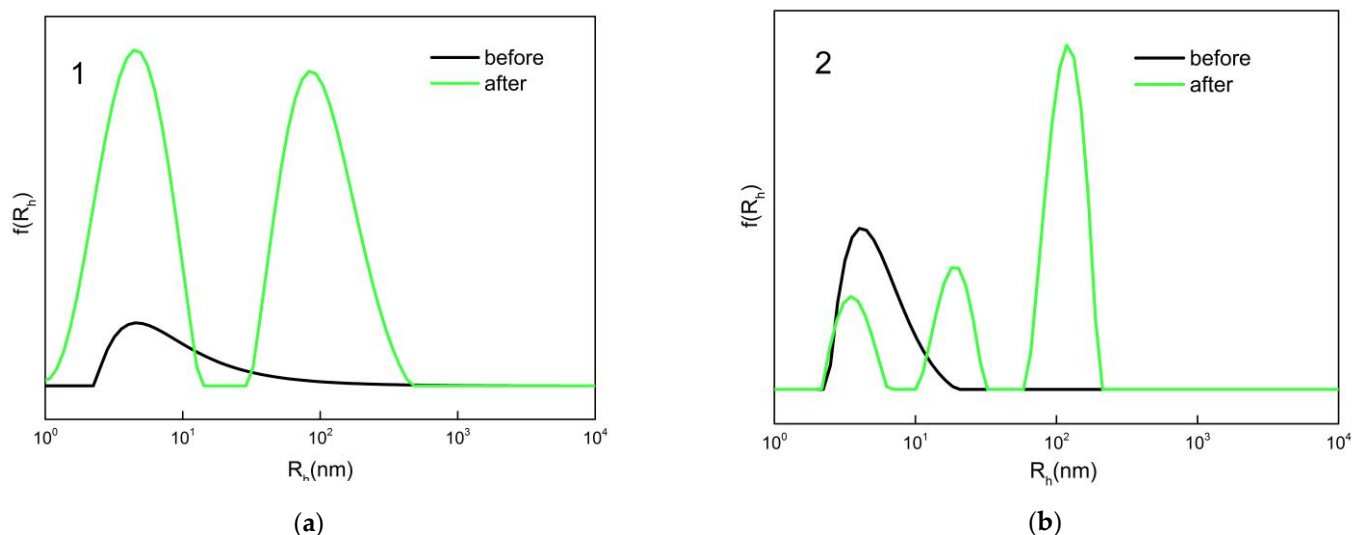
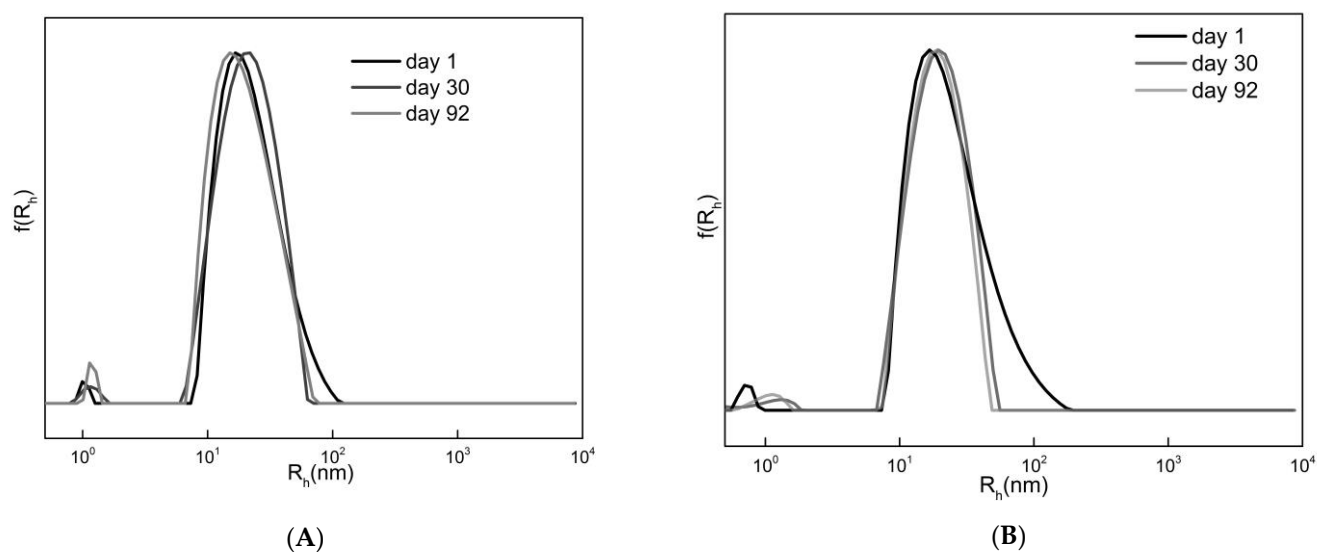


Figure S2. Size distributions of HC 1 (a) and HC 2 (b) in THF solution, before and after hydrolysis, at $c = 10^{-2}$ g/ml obtained by DLS.

Table S1. DLS results for the HCs before and after hydrolysis in THF ($c = 10^{-2}$ g/ml).

| HC | I_{90° (a.u.) | R_h (nm) | PDI |
|------------------------|-----------------------|------------------------------|------|
| HC 1 before hydrolysis | 60 | 9 | 0.54 |
| HC 1 after hydrolysis | 68 | 98 (46%)/ 3 (54%) | 0.48 |
| HC 2 before hydrolysis | 80 | 5 | 0.57 |
| HC 2 after hydrolysis | 218 | 3 (15%)/ 18 (20%)/ 116 (63%) | 0.53 |

Stability studies

**Figure S3.** Size distributions from DLS measurements of sample HC: Lys=1:1 (A) and HC: Lys=1:2(B) of series (c), within a period of three months.**Table S2.** DLS analysis of sample HC: Lys=1:1 and HC: Lys=1:2 of series (c), within a period of three months.

| Sample | Time | I_{90° (a.u.) | R_h (nm) | PDI |
|-----------------|--------|-----------------------|------------|------|
| (c) HC: Lys=1:2 | Day 1 | 276 | 23 | 0.30 |
| | Day 30 | 207 | 20 | 0.28 |
| | Day 92 | 220 | 19 | 0.27 |
| (c) HC: Lys=1:1 | Day 1 | 275 | 22 | 0.27 |
| | Day 30 | 252 | 21 | 0.27 |
| | Day 92 | 237 | 19 | 0.28 |

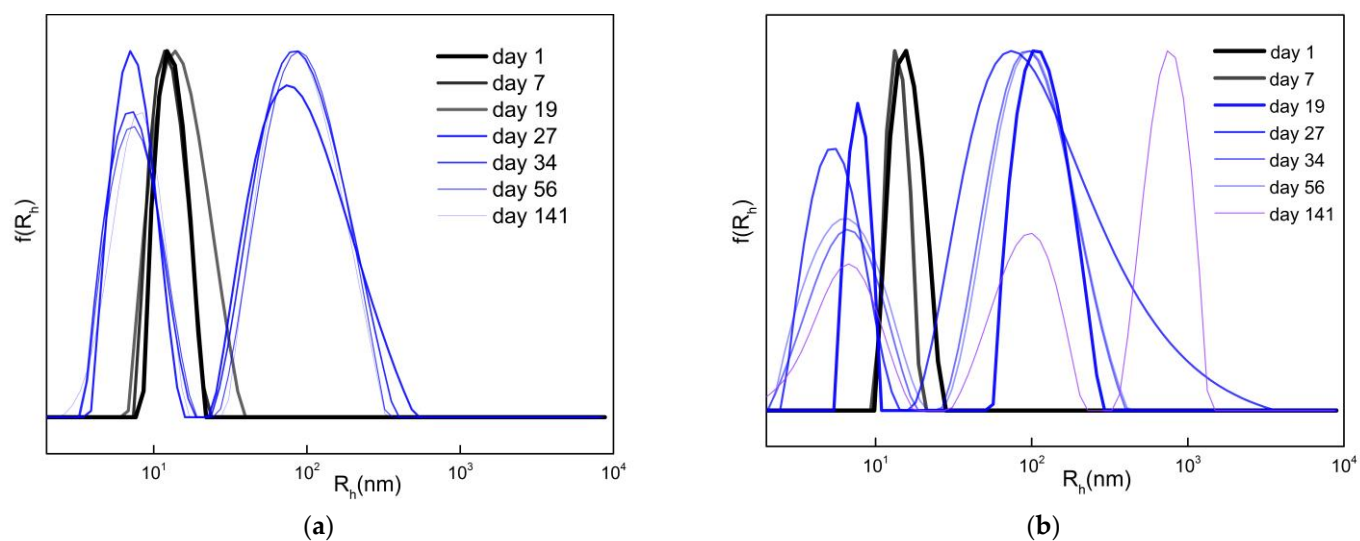


Figure S4. Size distributions from DLS measurements of samples HC 1/20% CUR (a) and HC 2/20% CUR (b) within a time period of approximately five months.



Figure S5. Photograph of the HC/CUR mixed NPs in aqueous solutions.

Table S3. DLE and DLC values based on UV-Vis absorption measurements.

| Sample | DLC (wt%) | DLE (wt%) |
|---------------|--------------|--------------|
| HBC 1/CUR 20% | 1.4 | 7.3 |
| HBC 2/CUR 20% | 0.4 | 2.2 |

Table S4. DLS analysis of samples HC 1/20% CUR (a) and HC 2/ 20% CUR (b) within a period of approximately five months.

| Sample | Time | I _{90°} (a.u.) | R _h (nm) | PDI |
|-----------------|---------|-------------------------|------------------------------|------|
| HC 1/20% CUR | Day 1 | 380 | 13 | 0.55 |
| | Day 7 | 355 | 12 | 0.54 |
| | Day 19 | 316 | 15 | 0.54 |
| | Day 27 | 310 | 92(66%)/ 7(34%) | 0.51 |
| | Day 34 | 315 | 91(66%)/ 7(34%) | 0.53 |
| | Day 56 | 290 | 93(65%)/ 8(35%) | 0.52 |
| | Day 141 | 330 | 91(65%)/ 8(35%) | 0.52 |
| | | | | |
| HC 2/20% CUR | Day 1 | 185 | 16 | 0.56 |
| | Day 7 | 180 | 14 | 0.55 |
| | Day 19 | 175 | 117(71%)/ 8(29%) | 0.57 |
| | Day 27 | 200 | 119(76%)/ 6(23%) | 0.53 |
| | Day 34 | 225 | 99(69%)/ 6(31%) | 0.54 |
| | Day 56 | 200 | 102(66%)/ 6(34%) | 0.52 |
| | Day 141 | 339 | 731(44%)/ 88(30%)/ 6(26%) | 0.50 |
| | | | | |

Drug loading content (DLC) and Drug loading efficiency (DLE)

DLC and DLE for the CUR loaded PNPs were calculated using the equations:

$$\text{DLC (wt\%)} = (\text{weight of loaded drug} / \text{weight of drug-loaded polymer}) \times 100, \quad (\text{S1})$$

$$\text{DLE (wt\%)} = (\text{weight of loaded drug} / \text{weight of initial drug feed}) \times 100, \quad (\text{S2})$$