

Silver-Sulfamethazine-Conjugated β -Cyclodextrin/Dextran-Coated Magnetic Nanoparticles for Pathogen Inhibition

Table S1. Nitrogen, sulfur and phosphorus content in Dex and β -CD derivatives.

Element Samples	N (wt.%)	S (wt.%)	P (wt.%)
β -CD-Ts	-	2.33	-
β -CD-EA	1.20	-	-
β -CD-VS	1.38	2.04	-
Dex-Ts	-	10.07	-
Dex-EA	5.04	2.07	-
Dex- β -CD	1.63	1.67	-
DPA-Dex- β -CD	1.18	1.40	6.62

β -CD-Ts – 6-toluenesulfonyl- β -cyclodextrin, β -CD-EA – 6-deoxy-6-hydroxyethylamino- β -cyclodextrin, β -CD-VS – 6-deoxy-6-(2-hydroxyethyl) (vinylsulfonyl)methylamino- β -cyclodextrin, Dex-Ts – 6-toluenesulfonyl-dextran, Dex-EA – 6-deoxy-6-hydroxyethylamino-dextran and DPA-Dex- β -CD – 1,1-diphosphonic acid- β -cyclodextrin/dextran.

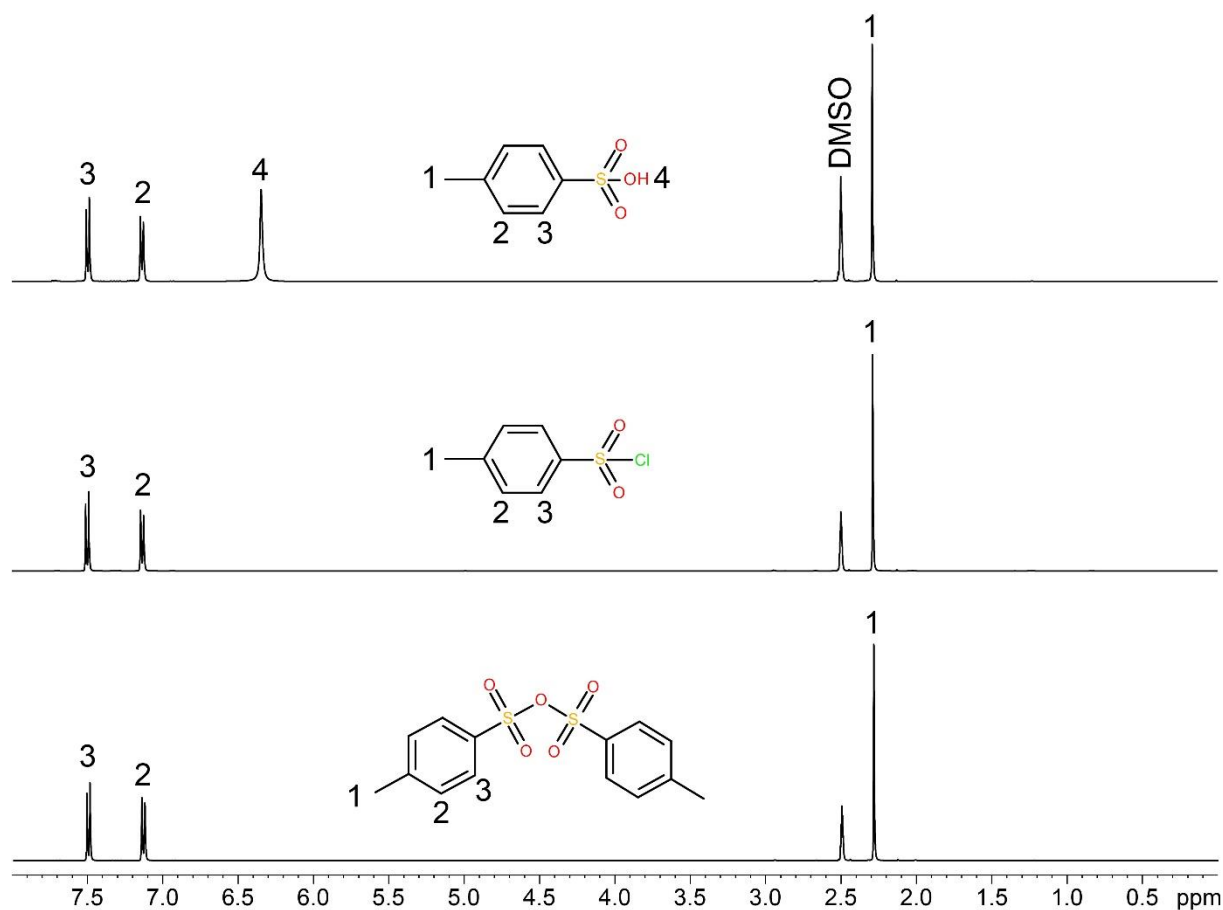


Figure S1. ^1H NMR spectra of 4-toluenesulfonic acid (TsOH), 4-toluenesulfonyl chloride (TsCl) and 4-toluenesulfonic anhydride (Ts₂O) in DMSO- d_6 at 25 °C.

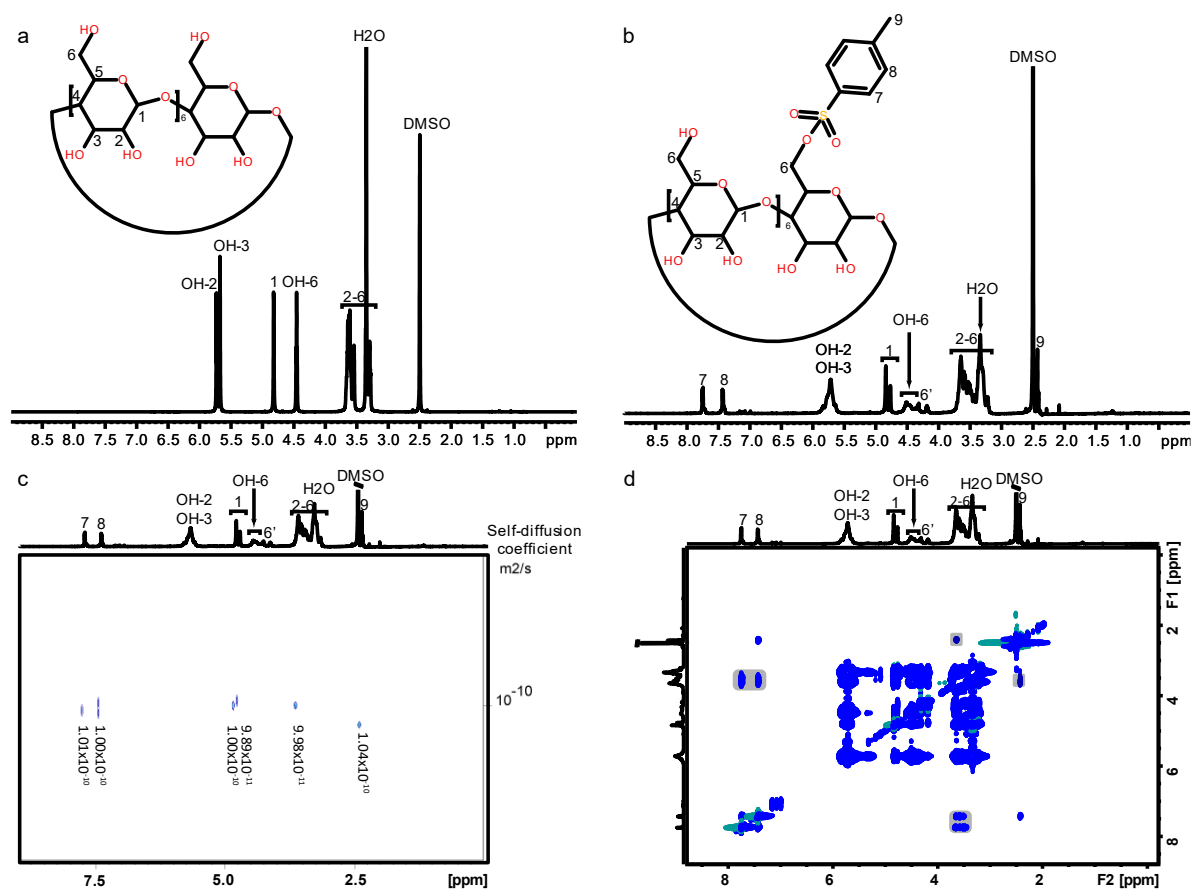


Figure S2. ^1H NMR spectra of (a) β -cyclodextrin and (b) β -cyclodextrin modified with tosyl groups dissolved in DMSO- d_6 , (c) ^1H - ^1H 2D NOESY NMR and (d) 2D DOSY NMR spectra of tosyl-modified β -CD.

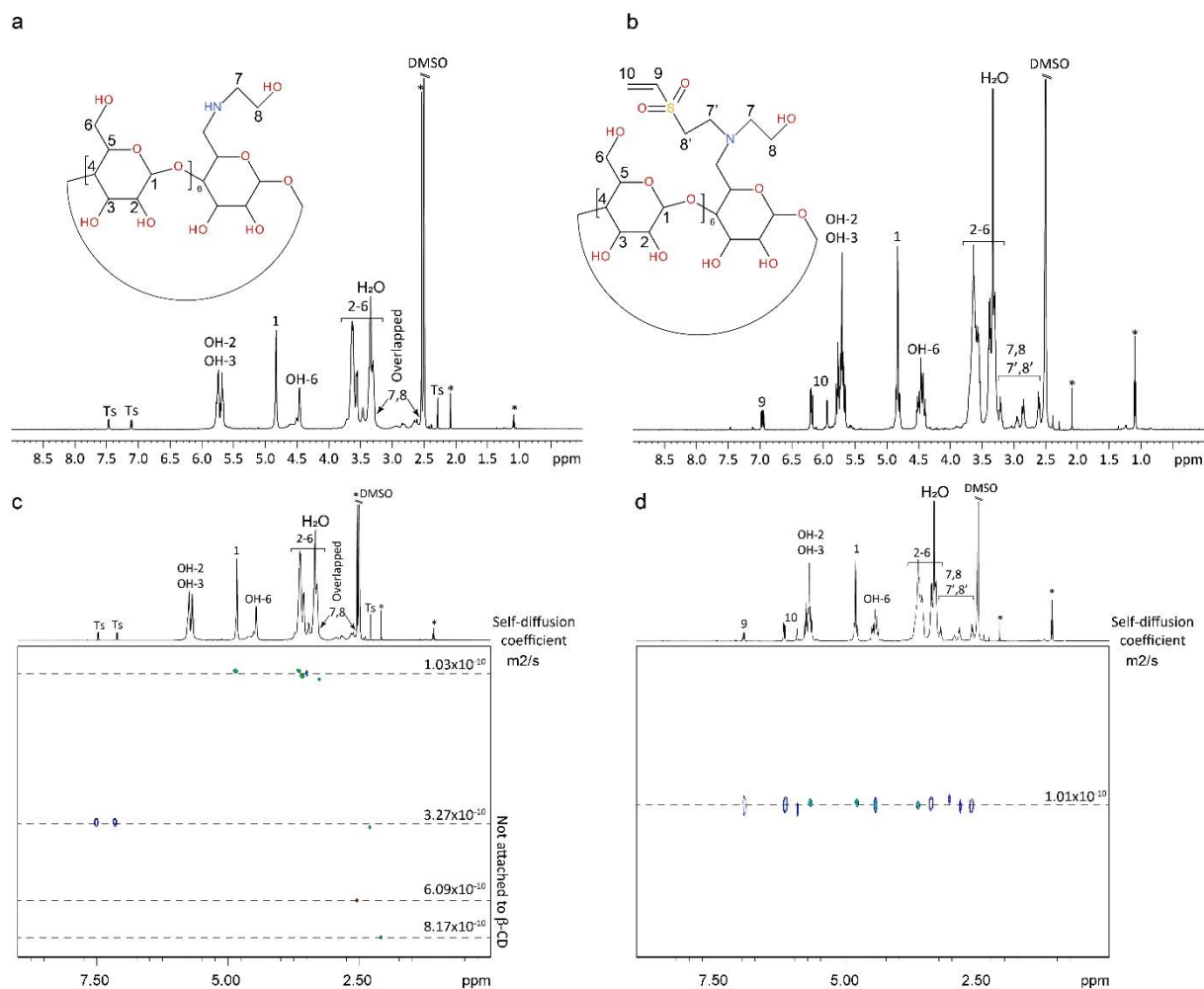


Figure S3. (a, b) ^1H NMR and (c, d) DOSY NMR spectra of (a, c) β -CD-EA and (b, d) β -CD-VS. Signals denoted by an asterisk (*) originate from residual solvents used in synthesis. Signals denoted as "Ts" are due to tosyl groups (not attached to β -CD ring).

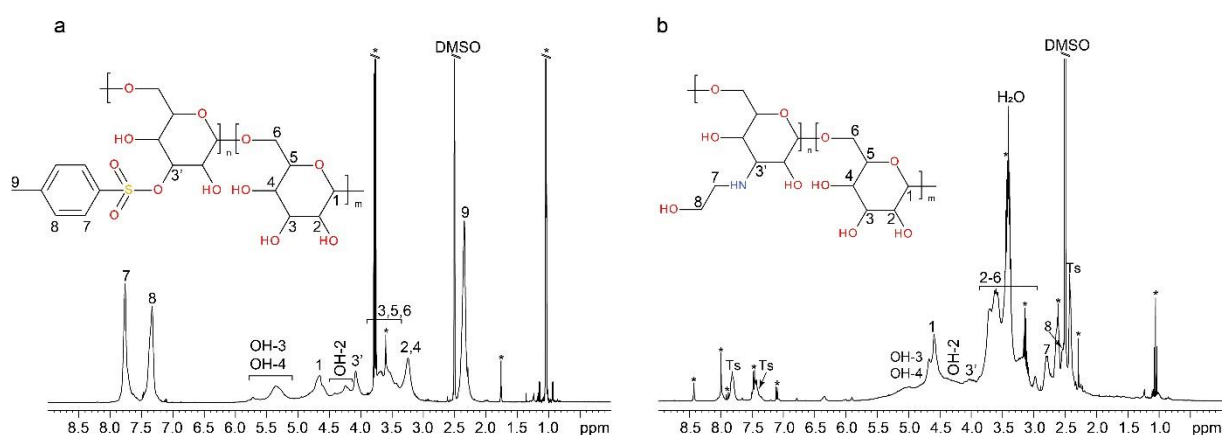


Figure S4. ^1H NMR spectra of (a) Dex-Ts and (b) Dex-EA. Signals denoted by an asterisk (*) originate from residual solvents used in synthesis or impurities.

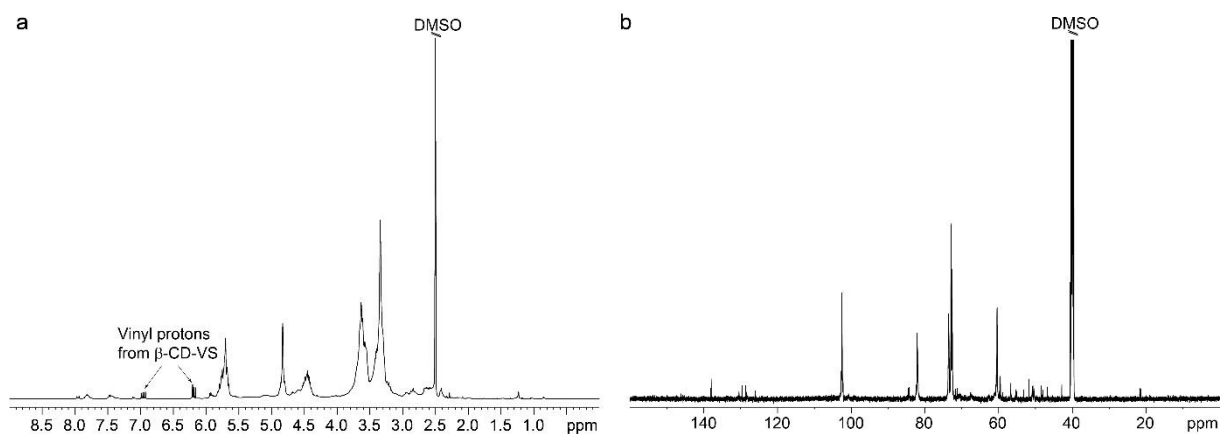


Figure S5. (a) ^1H NMR spectrum of DPA-Dex- β -CD and (b) ^{13}C NMR spectrum of DPA-Dex- β -CD.

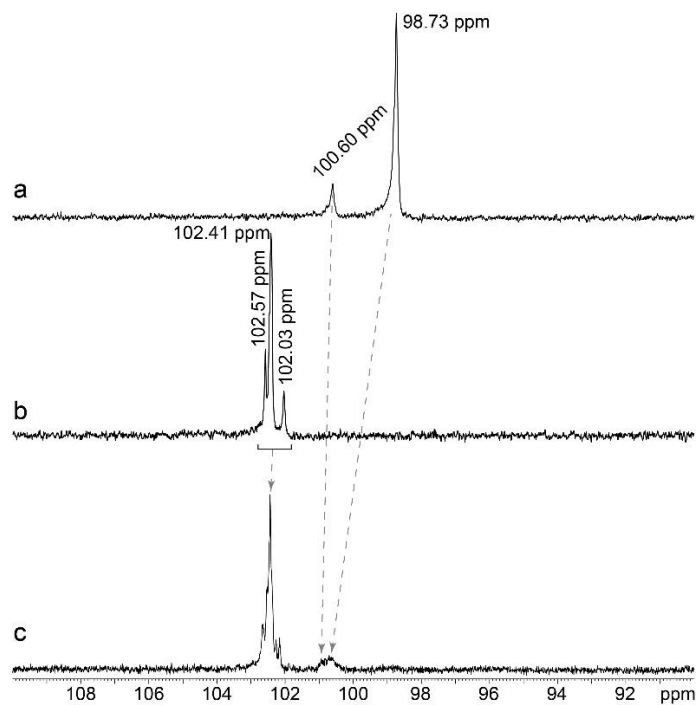


Figure S6. ^{13}C NMR spectra (90-110 ppm region) of (a) Dex-EA, (b) β -CD-EA and (c) DPA-Dex- β -CD.

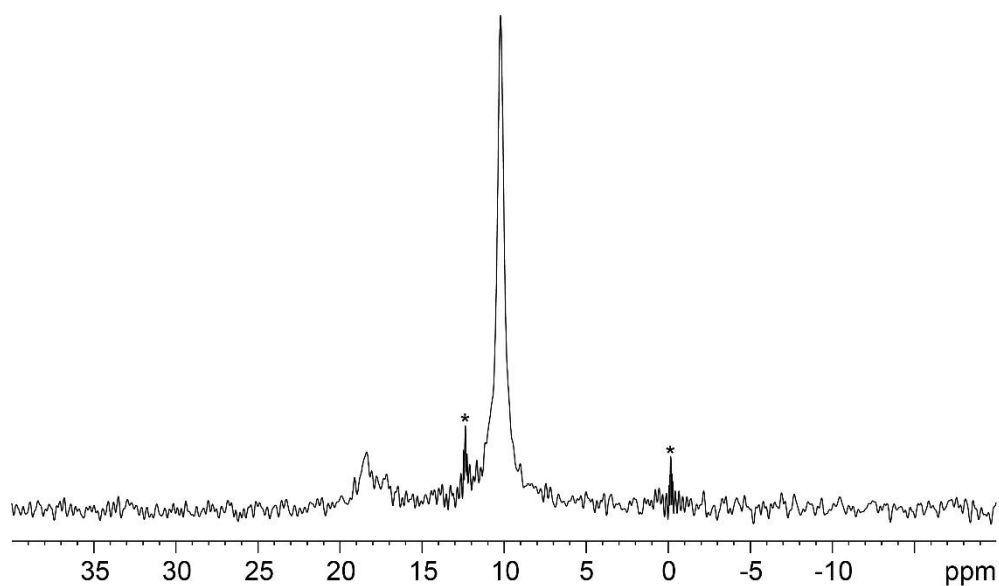


Figure S7. ^{31}P NMR spectrum of DPA-Dex- β -CD. Signals denoted by an asterisk (*) originate from impurities.

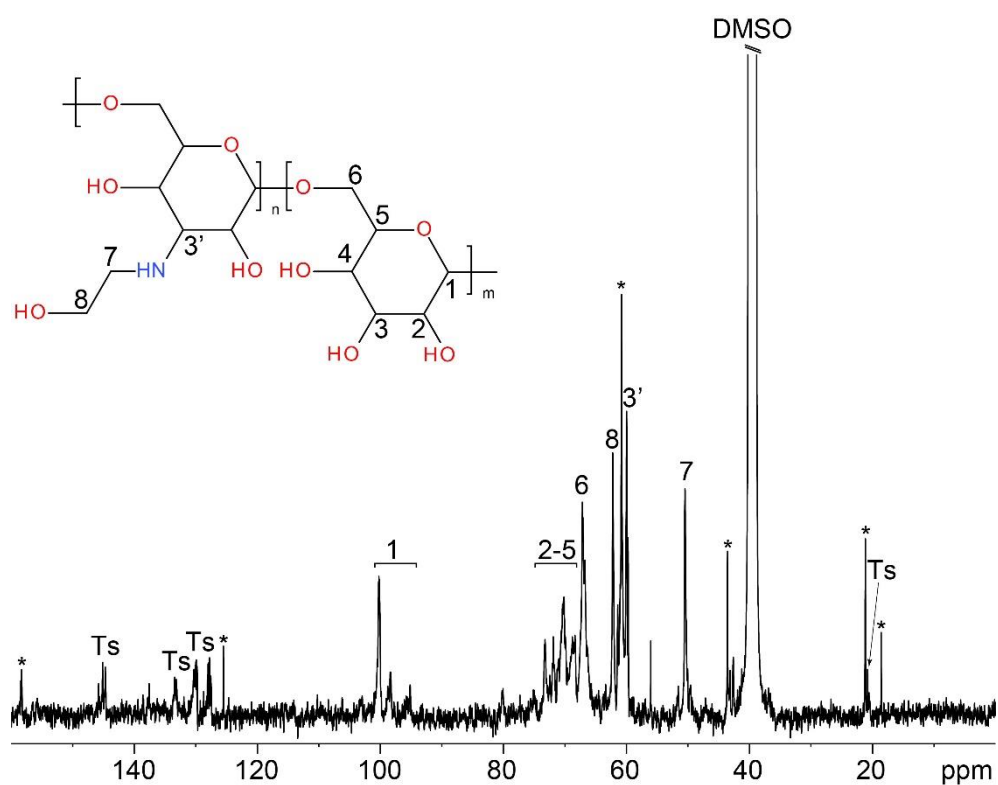


Figure S8. ^{13}C NMR spectrum of Dex-EA. Signals denoted by an asterisk (*) originate from residual solvents used in synthesis or impurities. Signals marked as “Ts” are caused by residual tosyl groups.

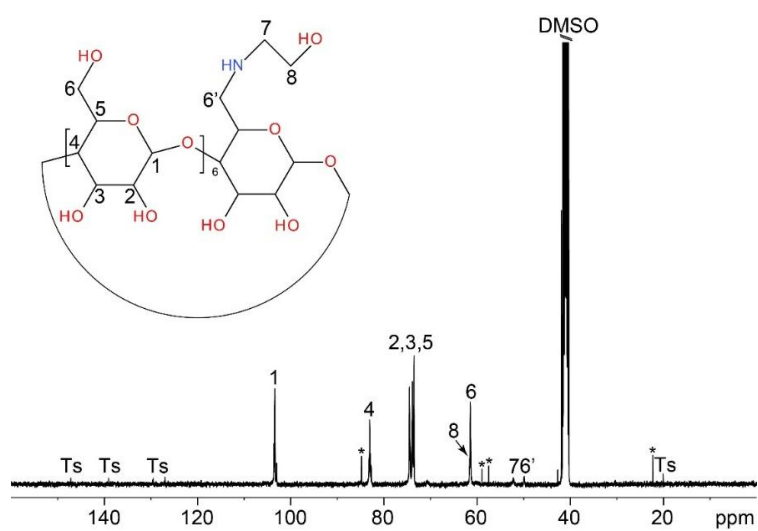


Figure S9. ^{13}C NMR spectrum of CD-EA. Signals denoted by an asterisk (*) originate from residual solvents used in synthesis or impurities. Signals marked as "Ts" are due to residual tosyl groups.