

# Synthesis and Characterization of Nanoparticle-Based Dexamethasone-Polypeptide Conjugates as Potential Intravitreal Delivery Systems

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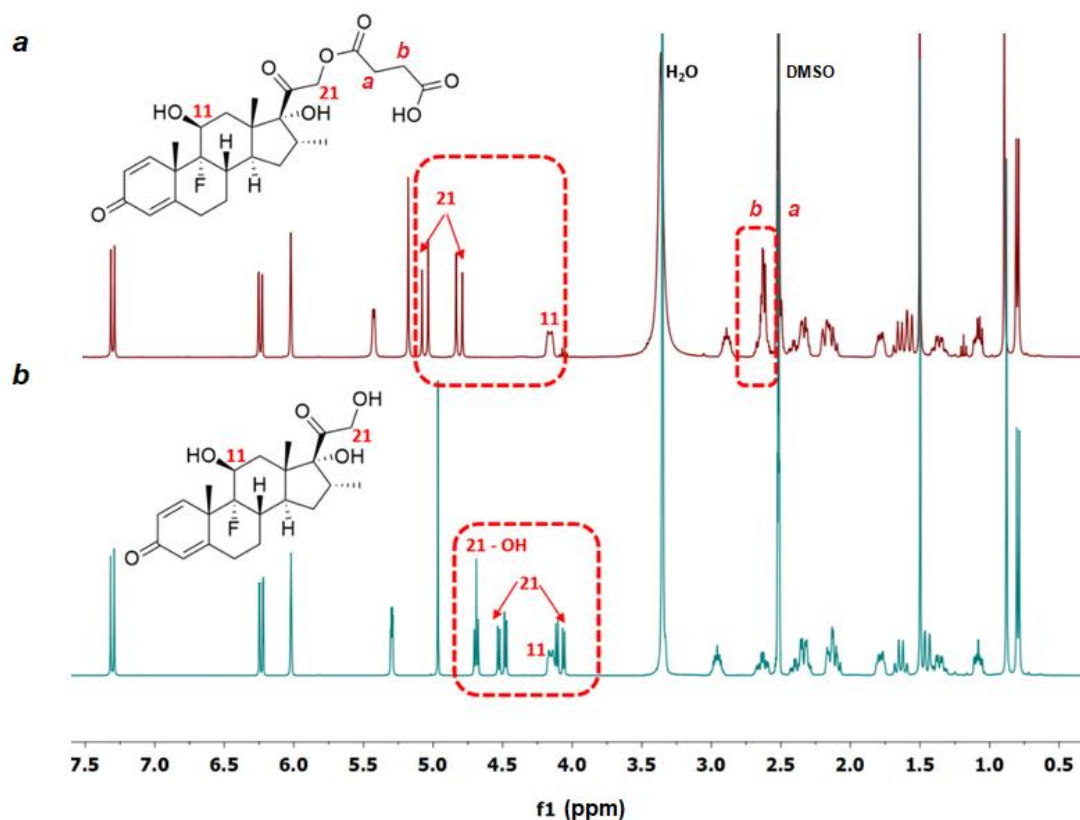
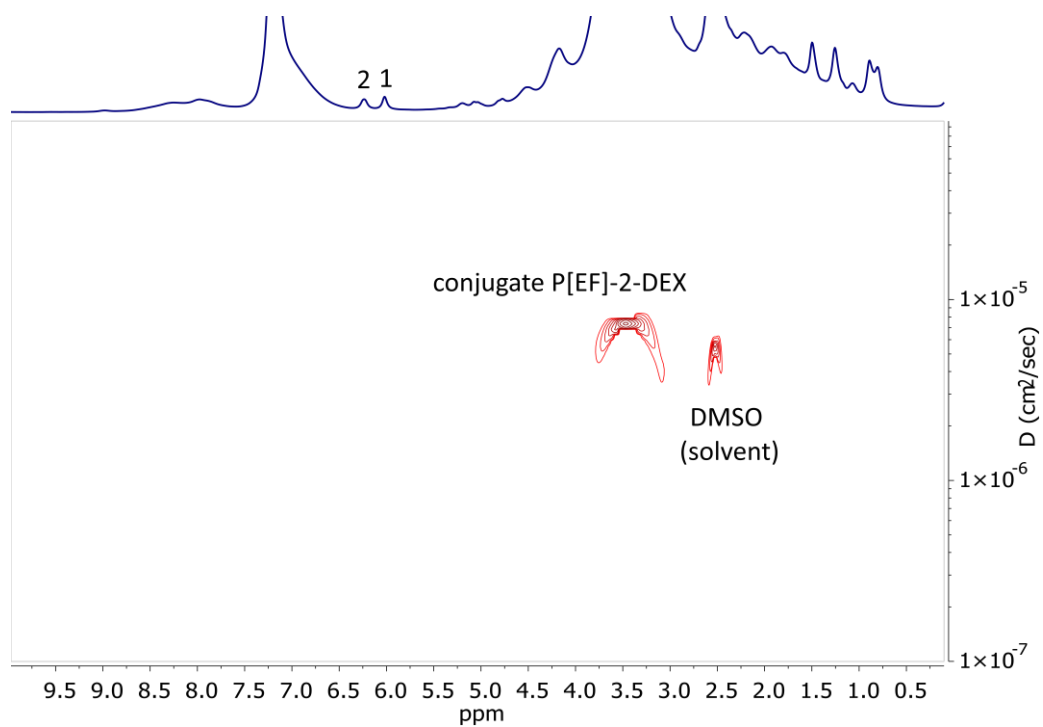


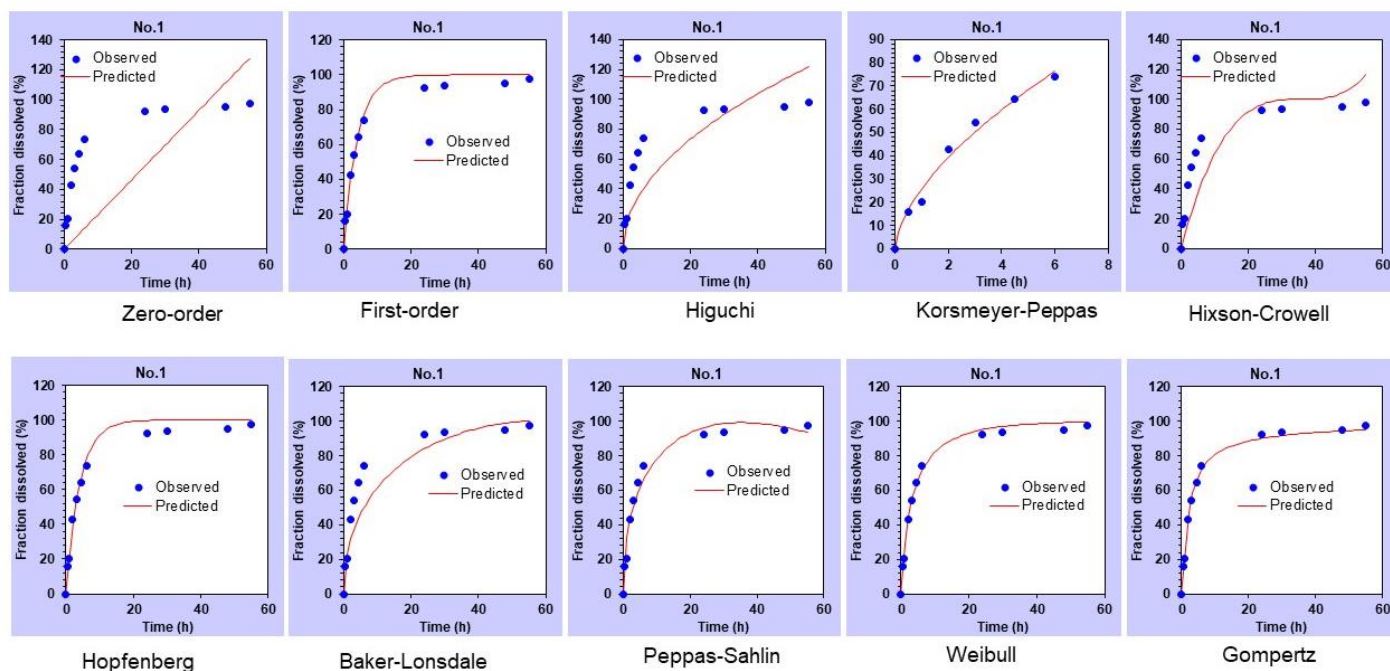
Figure S1. <sup>1</sup>H NMR spectra of DEX-hemisuccinate (a) and DEX (b) (DMSO-d<sub>6</sub>).



**Figure S2.**  $^1\text{H}$  NMR DOSY spectrum of P[EF]-2-DEX. In spectrum 1,2 - hydrogen atoms at 4 and 2 carbon atoms of DEX, respectively (DMSO- $d_6$ ).

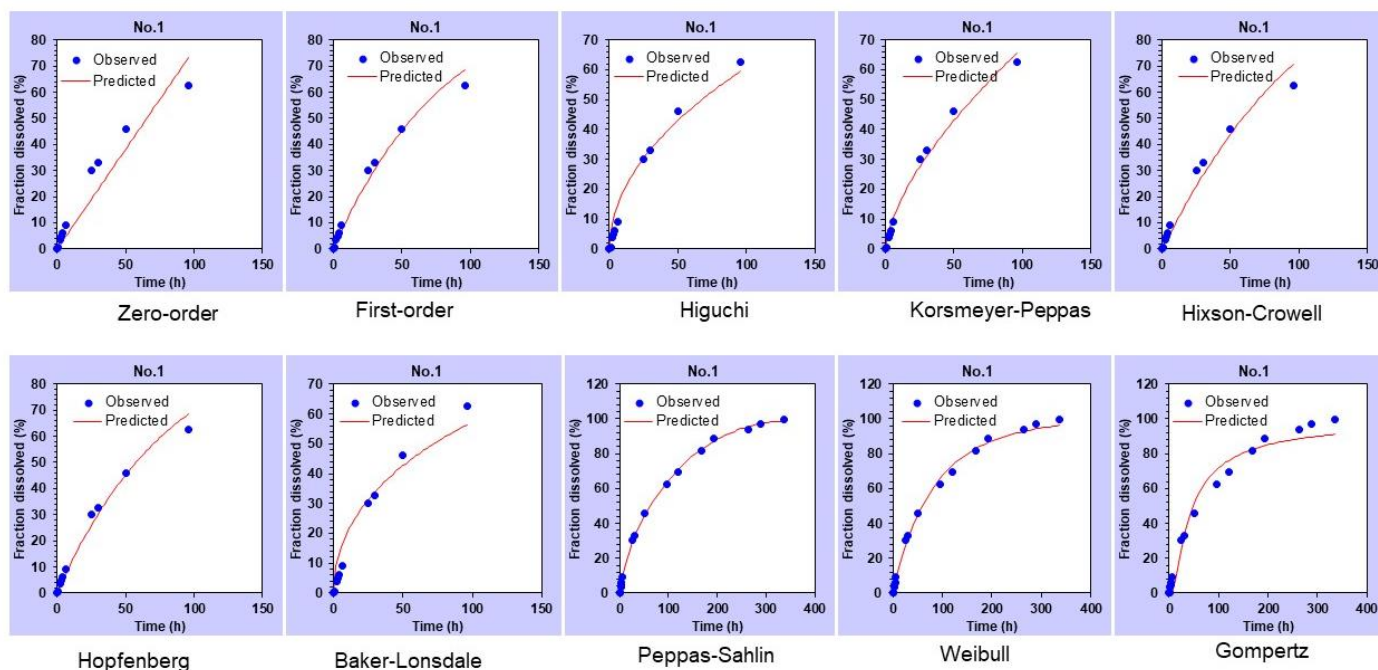
|     |                  |  |
|-----|------------------|--|
| (a) | Zero-order       | $F=k_0 \cdot t$  |
|     | First-order      | $F=100 \cdot [1 - \text{Exp}(-k_i \cdot t)]$                               |
|     | Higuchi          | $F=k_H \cdot t^{0.5}$  |
|     | Korsmeyer-Peppas | $F=k_{KP} \cdot t^n$   |
|     | Hixson-Crowell   | $F=100 \cdot [1 - (1 - k_{HC} \cdot t)^3]$                                 |
|     | Hopfenberg       | $F=100 \cdot [1 - (1 - k_{HB} \cdot t)^n]$                                 |
|     | Baker-Lonsdale   | $3/2 \cdot [1 - (1 - F/100)^{2/3}] - F/100 = k_{BL} \cdot t$               |
|     | Peppas-Sahlin    | $F=k_1 \cdot t^m + k_2 \cdot t^{(2 \cdot m)}$                              |
|     | Weibull          | $F=100 \cdot \{1 - \text{Exp}[-((t - T_i)^\beta) / \alpha]\}$              |
|     | Gompertz         | $F=100 \cdot \text{Exp}\{-\alpha \cdot \text{Exp}[-\beta \cdot \log(t)]\}$ |

## Encapsulated P[KF]D,L-2/DEX



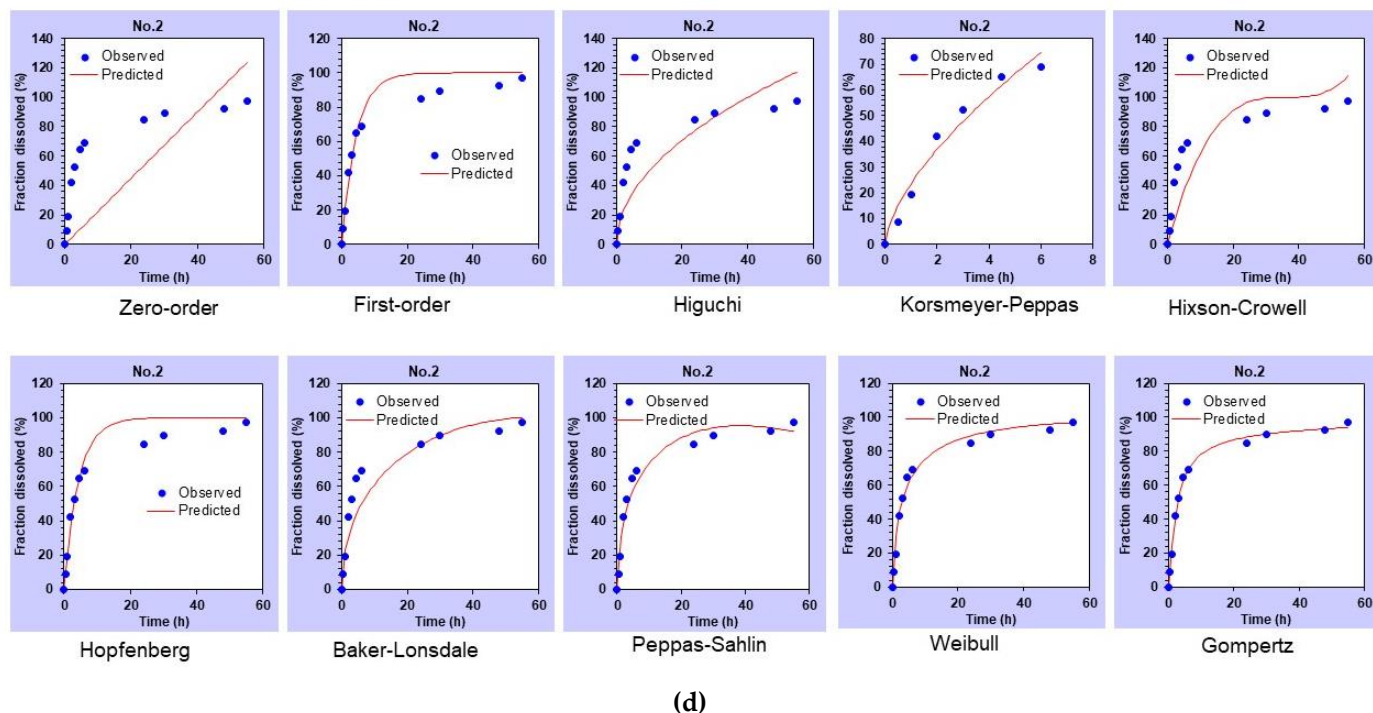
(b)

## Conjugated P[KF]D,L-2/DEX

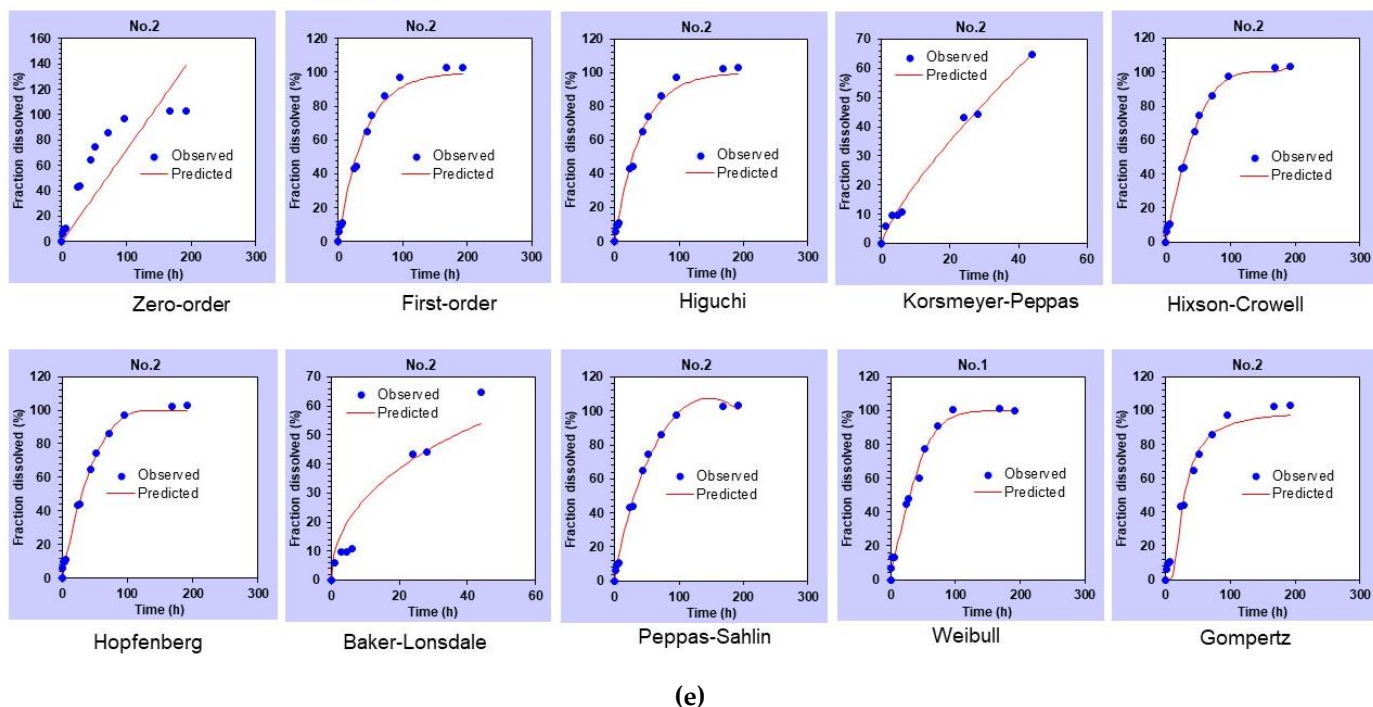


(c)

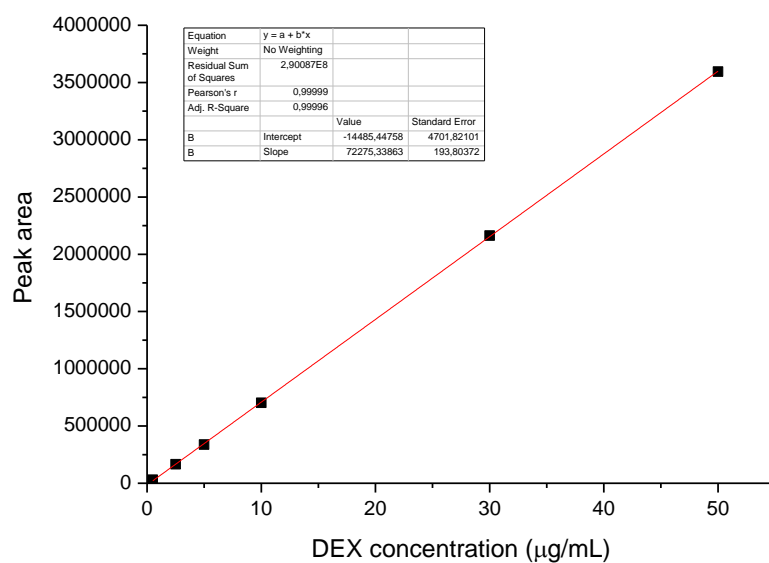
### Conjugated P[KF]D,L-2/DEX/HEP (PBS)



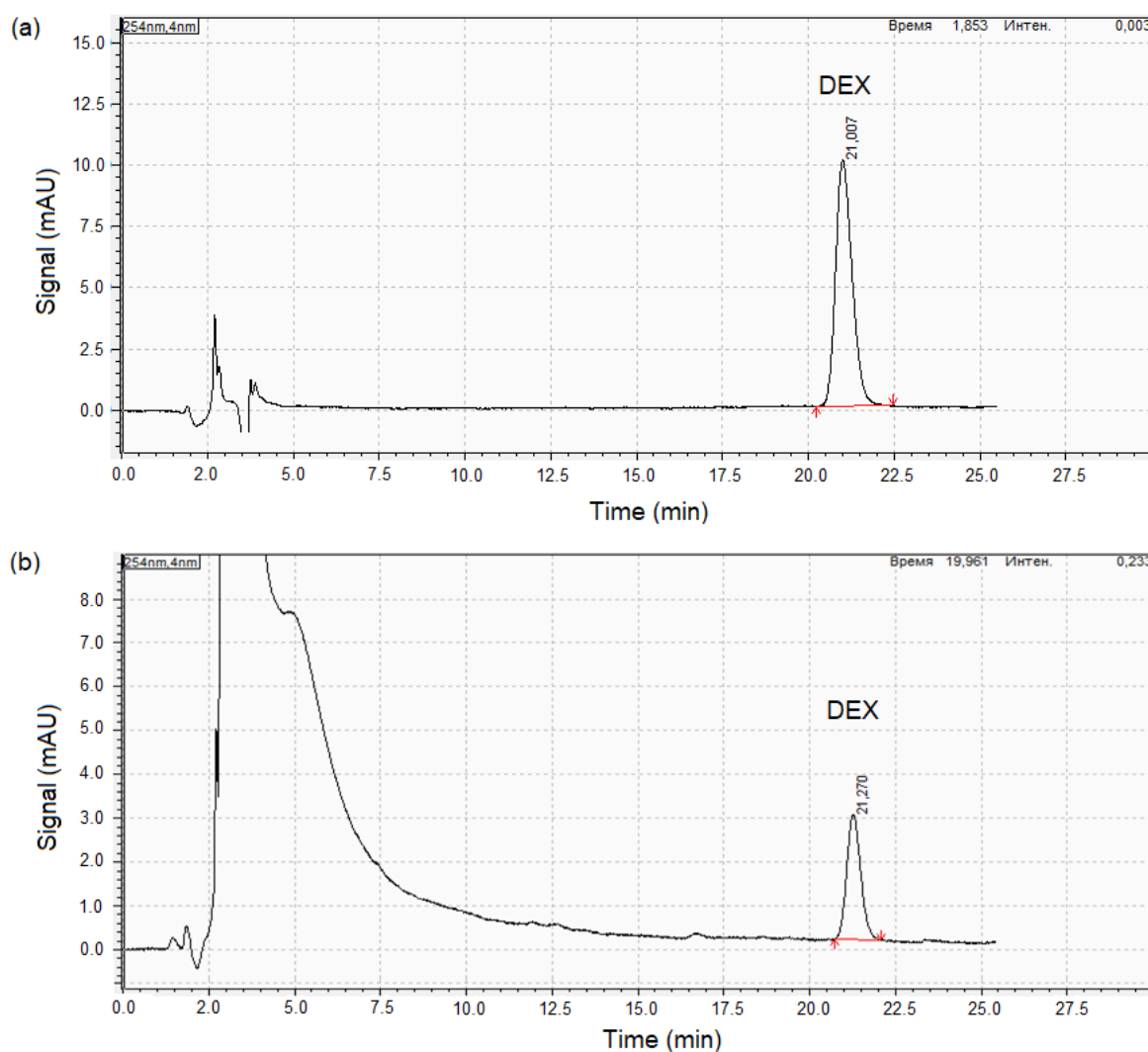
### Conjugated P[KF]D,L-2/DEX/HEP (vitreous)



**Figure S3** Equations for the different release models (a) and mathematical analysis for the release data (b-e) for some encapsulated and conjugated samples.



**Figure S4.** HPLC calibration plot obtained by reversed-phase HPLC at isocratic elution (C18 column, acetonitrile/water = 30/70, *v/v*) for dexamethasone solutions with different concentrations.



**Figure S5.** Chromatograms for standard DEX solution (a) and solution obtained after DEX release (b).