Supporting Information

Preparation of Taxol-SA and Dex-SA:

The synthetic route was according to the reference we have reported[1].

^{1}H-NMR and HR-MS of synthetic compounds:

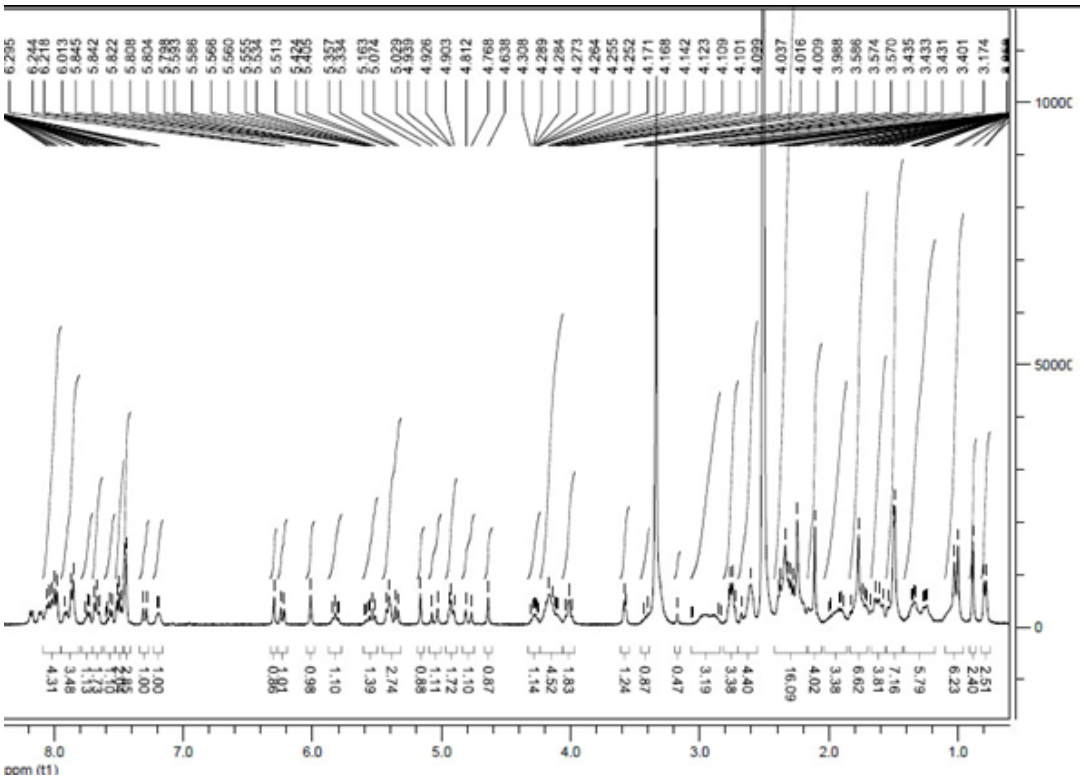

Fig. S-1. ^{1}H NMR of Dex-K(Taxol)E-ss-EE

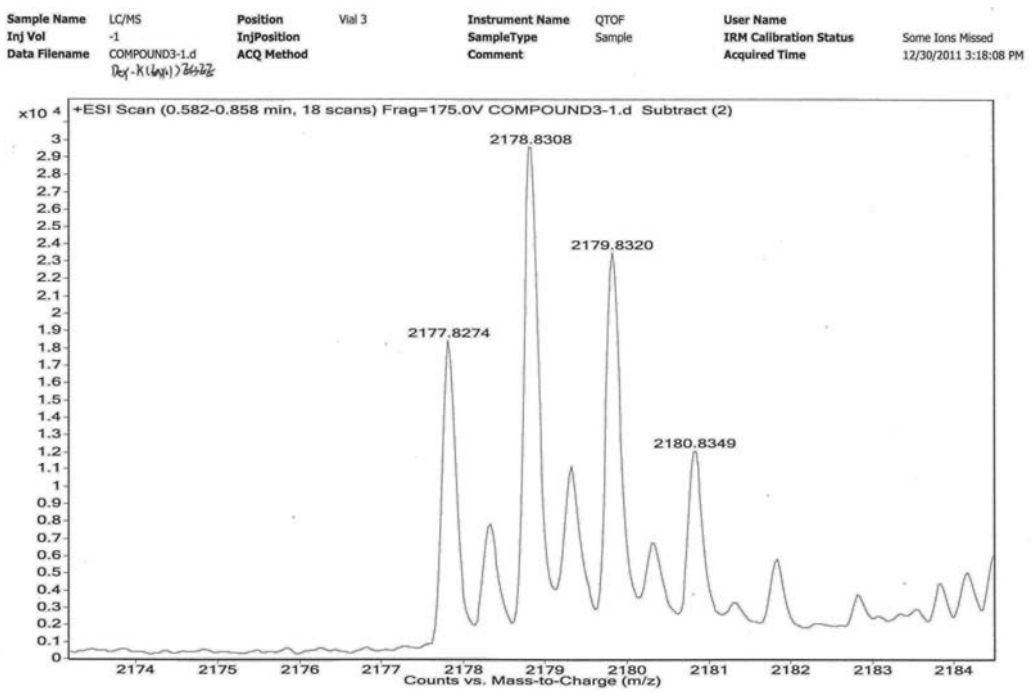

Fig. S-2. HR-MS of Dex-K(Taxol)E-ss-EE

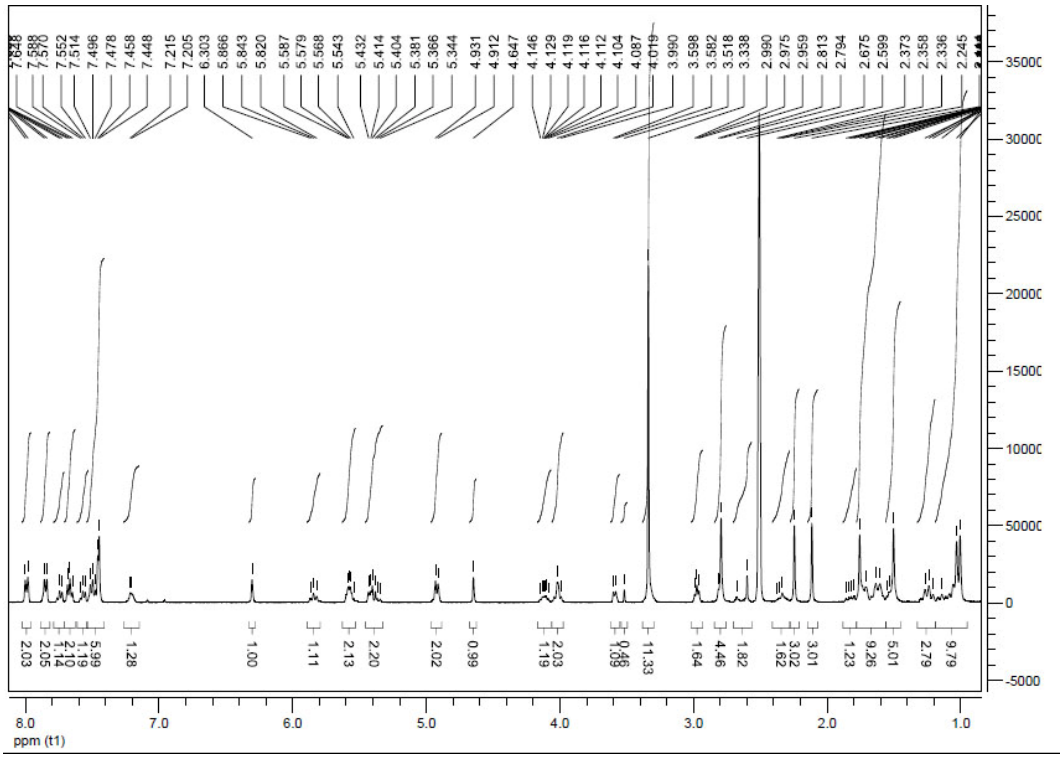

Fig. S-3. ^{1}H NMR of Ac-K(Taxol)E-ss-EE

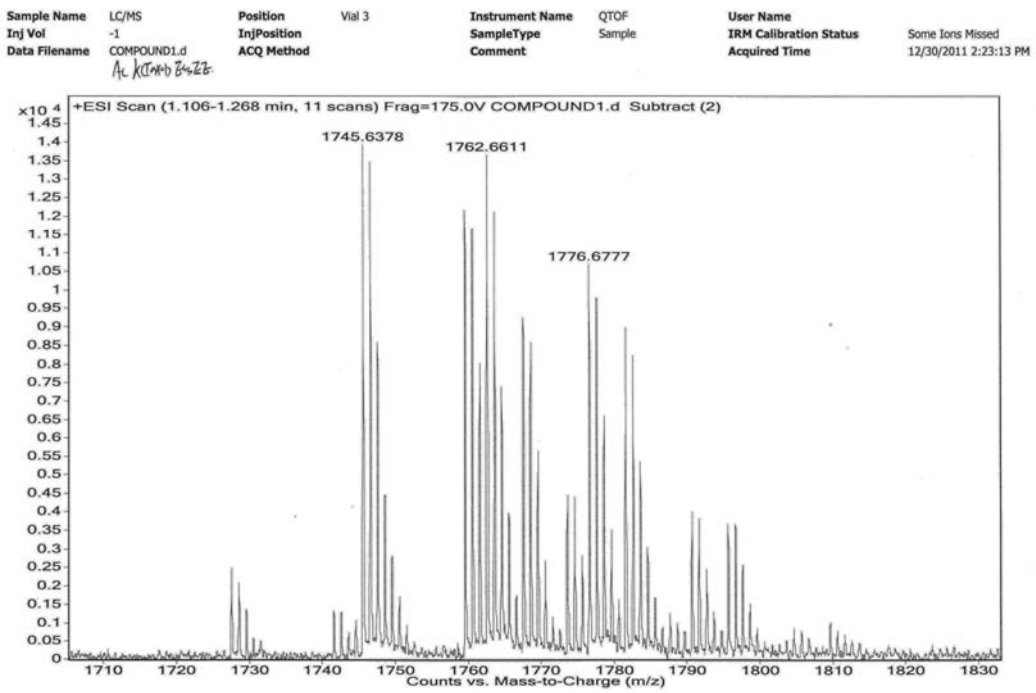

Fig. S-4. HR-MS of Ac-K(Taxol)E-ss-EE

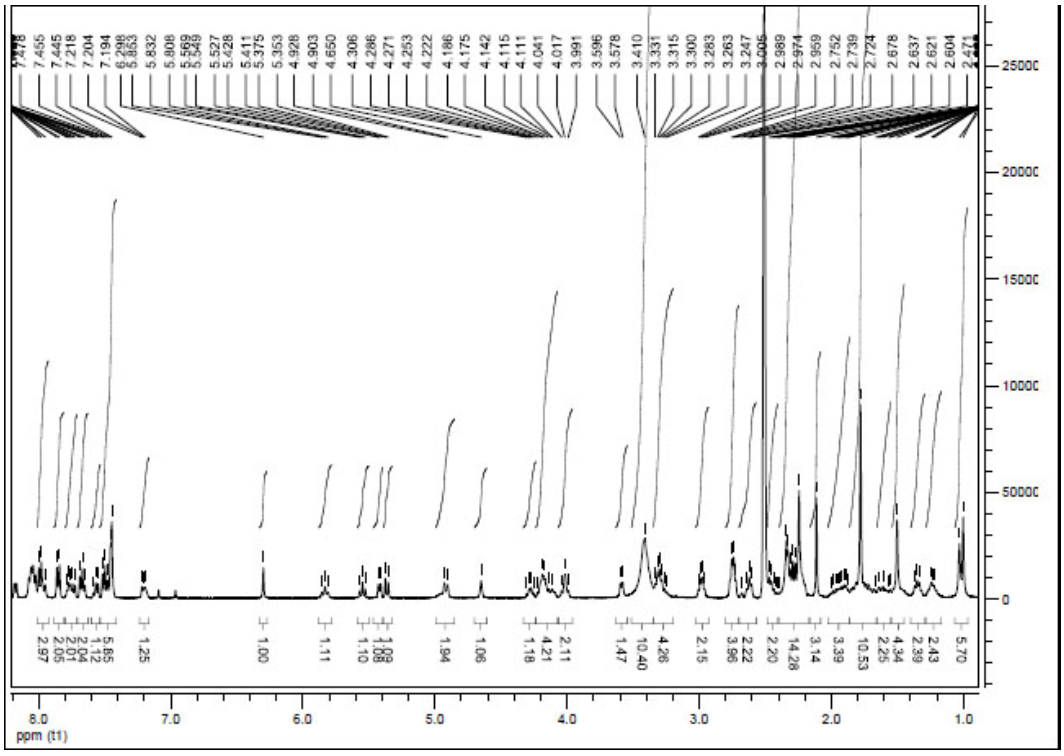

Fig. S-5. ^{1}H NMR of Taxol-K(ac)E-ss-EE

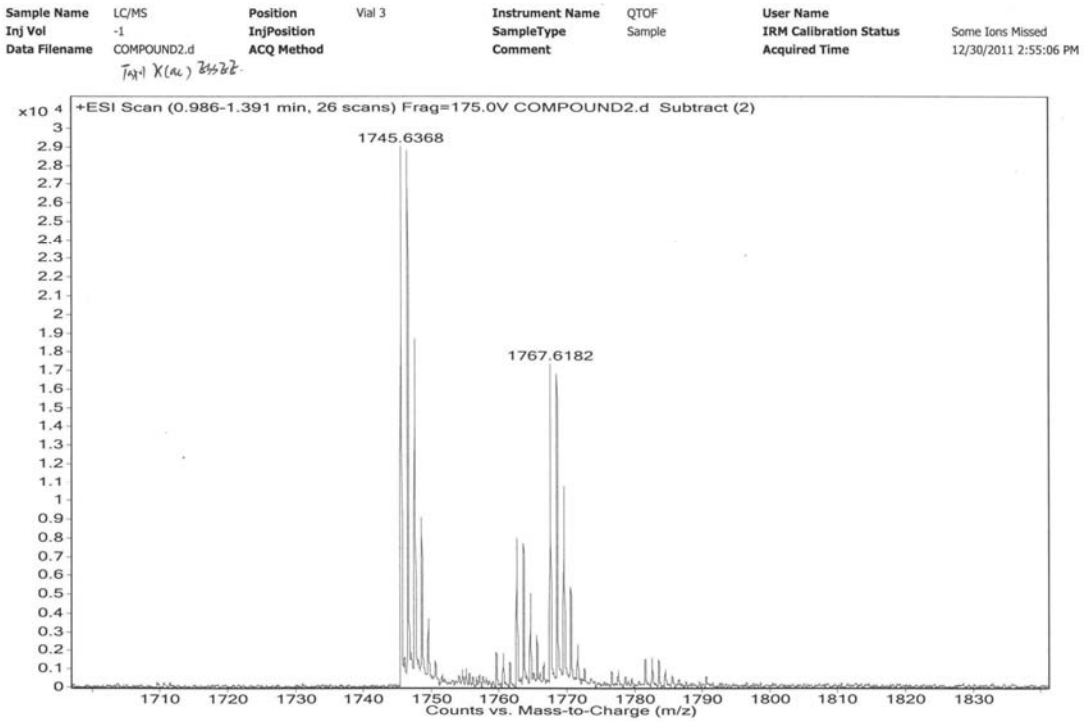

Fig. S-6. HR-MS of Taxol-K(ac)E-ss-EE

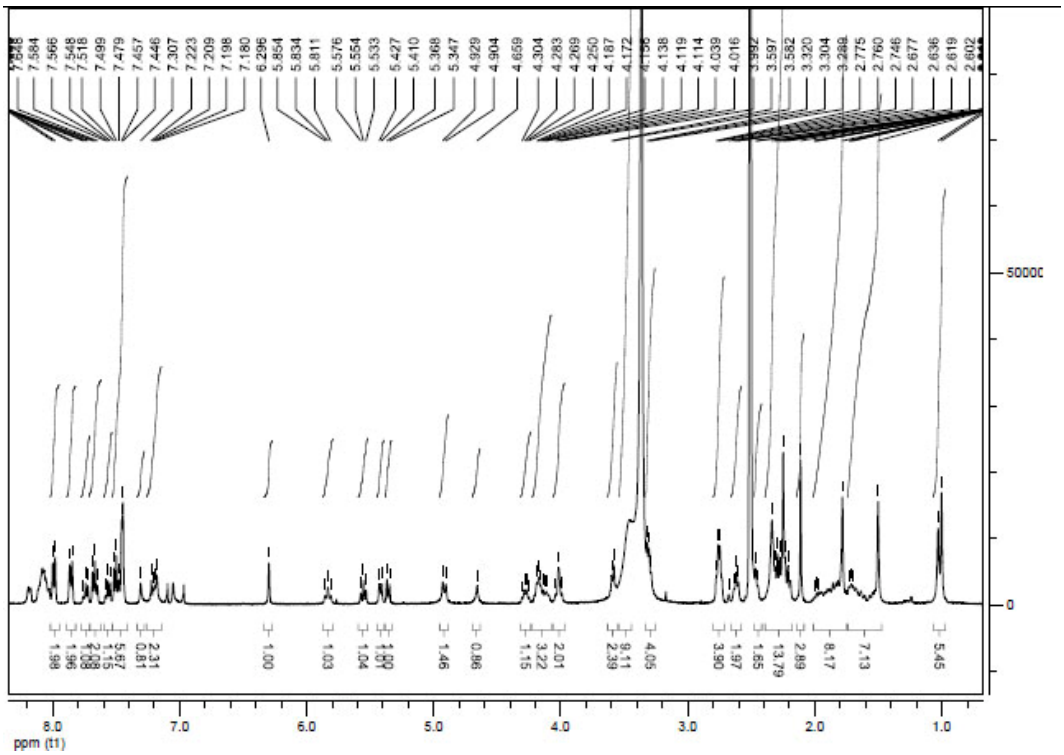

Fig. S-7. ^{1}H NMR of Taxol- E-ss-EE

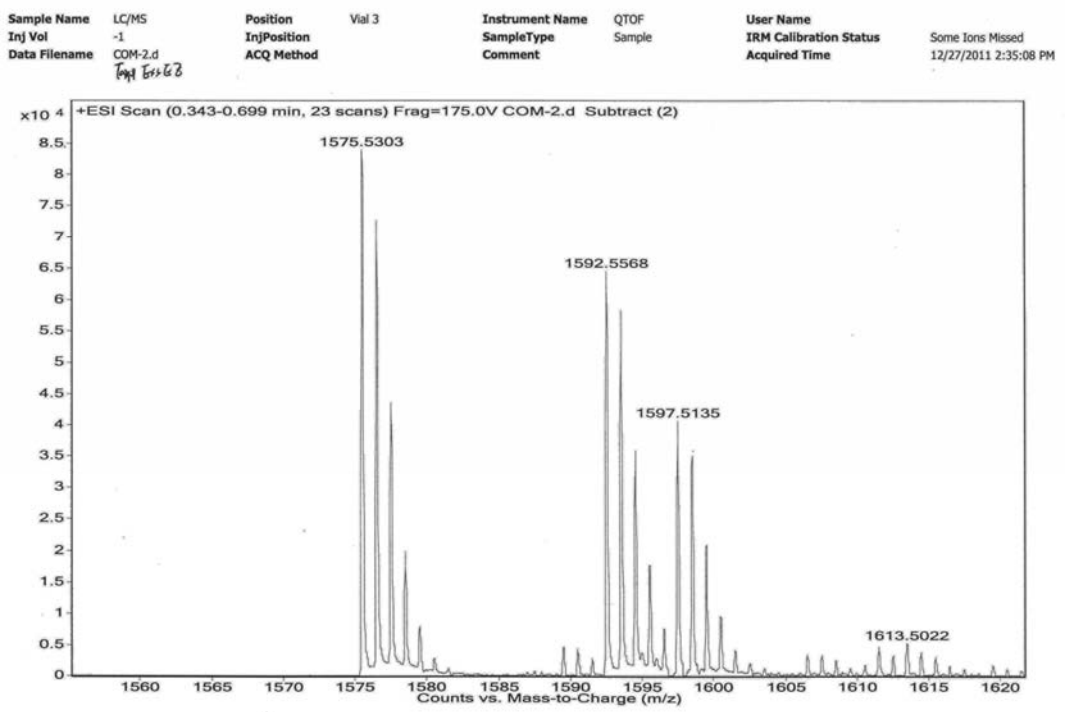

Fig. S-8. HR-MS of Taxol- E-ss-EE

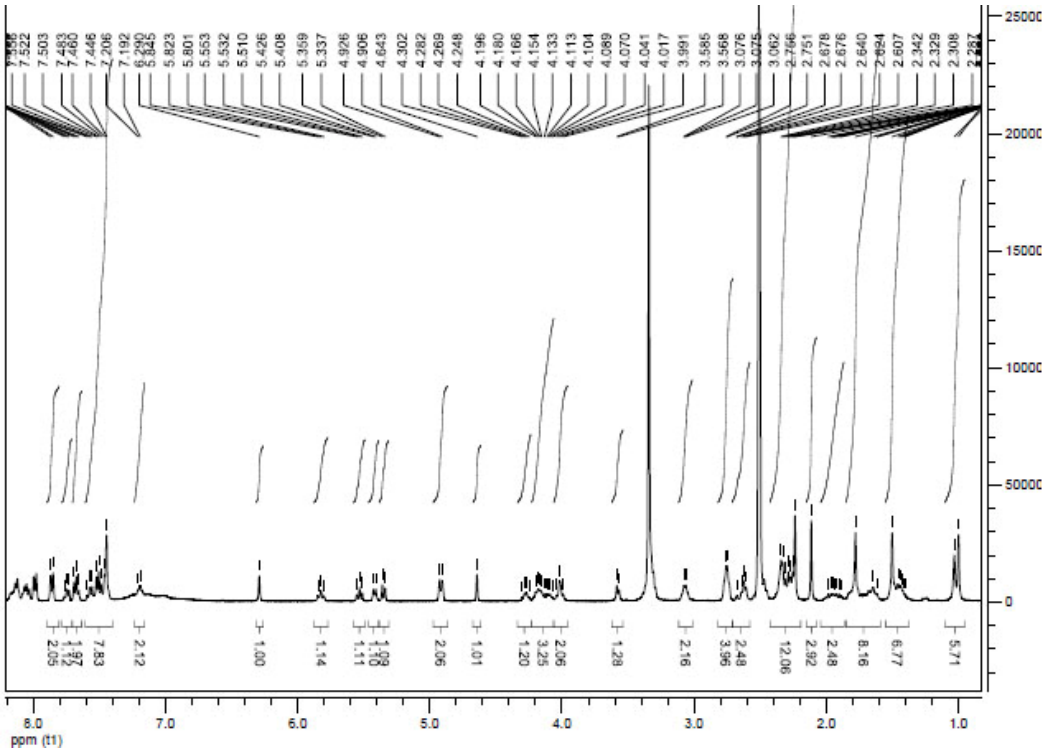

Fig. S-9. ^{1}H NMR of Taxol- R-ss-EE

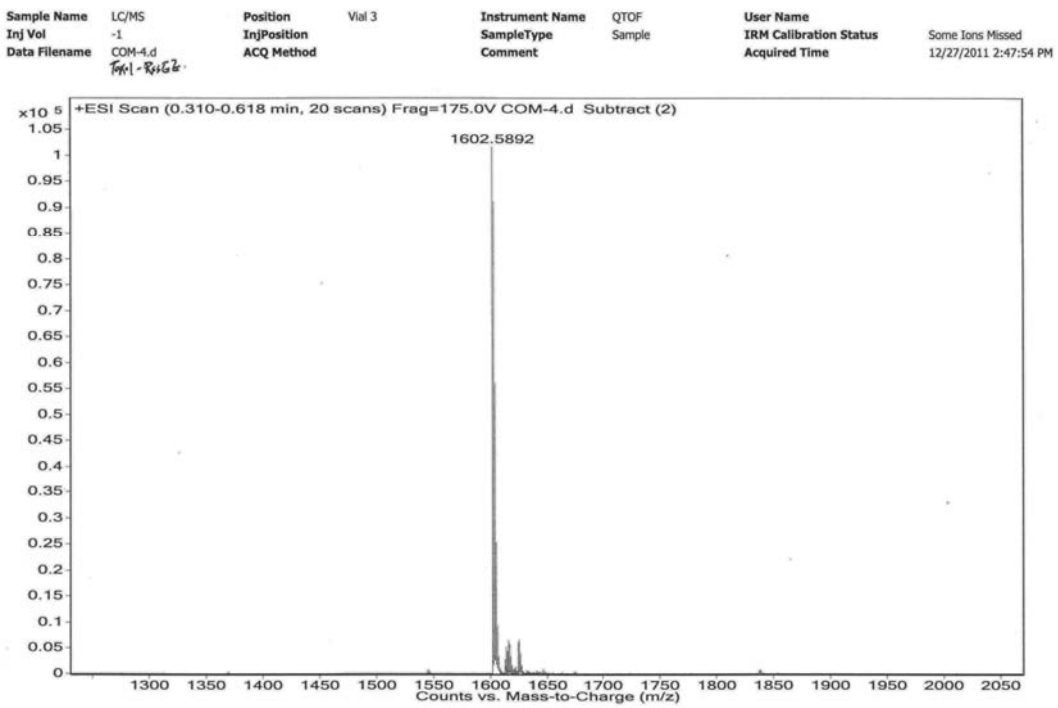

Fig. S-10. HR-MS of Taxol- R-ss-EE

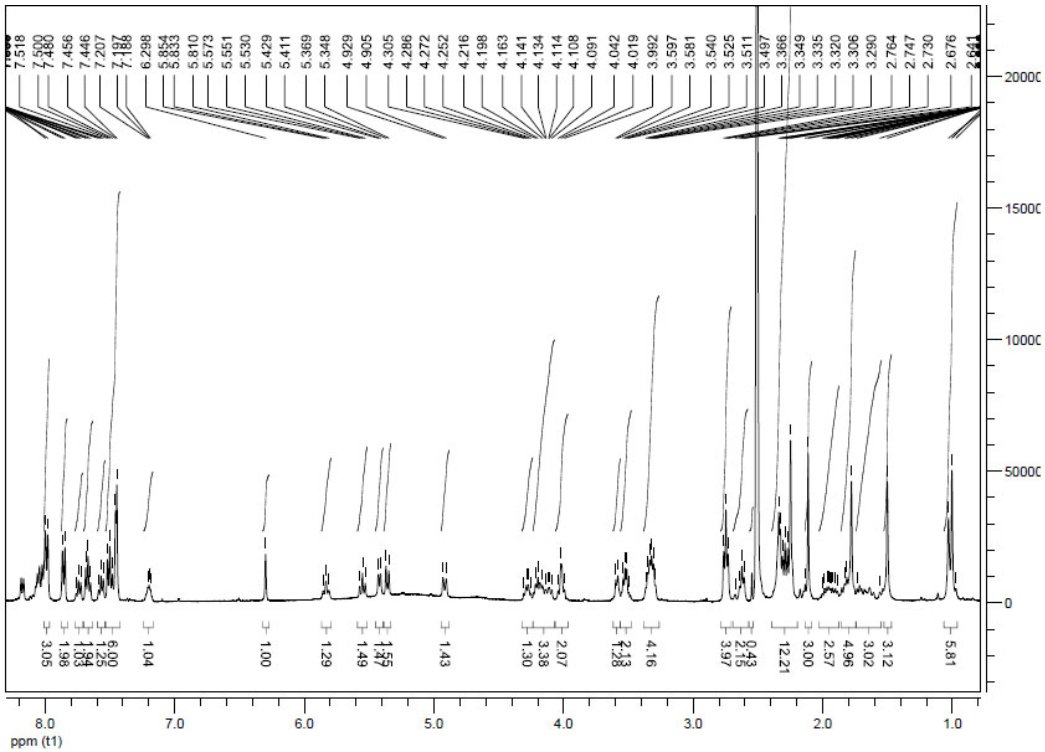

Fig.S-11. ^{1}H NMR of Taxol- S-ss-EE

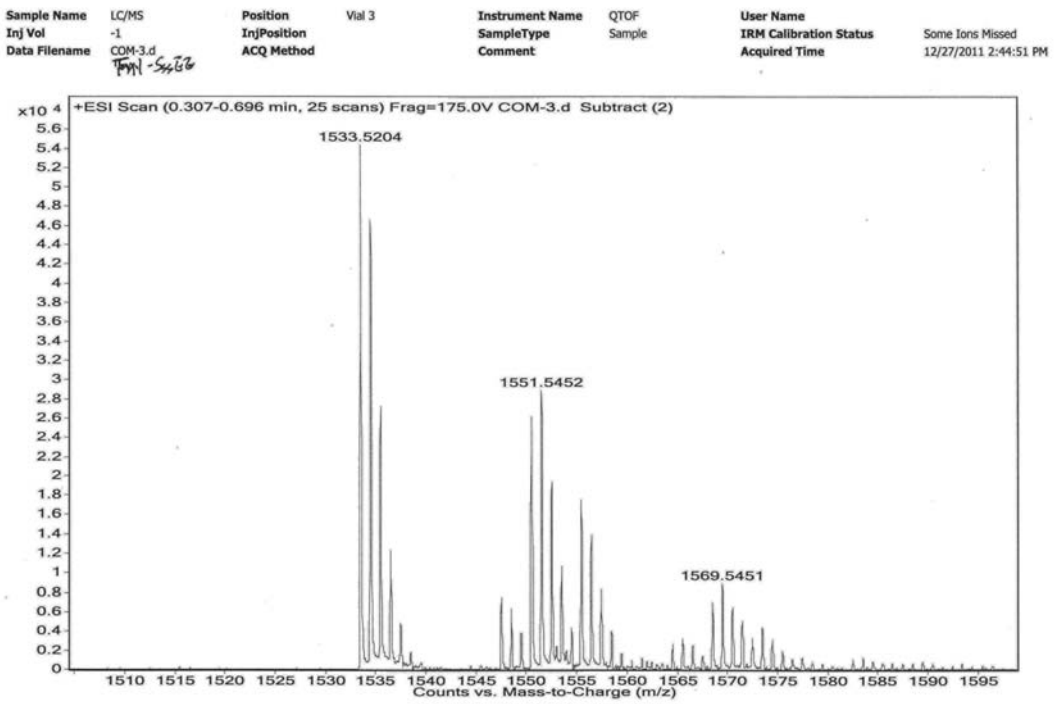

Fig. S-12. HR-MS of Taxol- S-ss-EE

Rheology

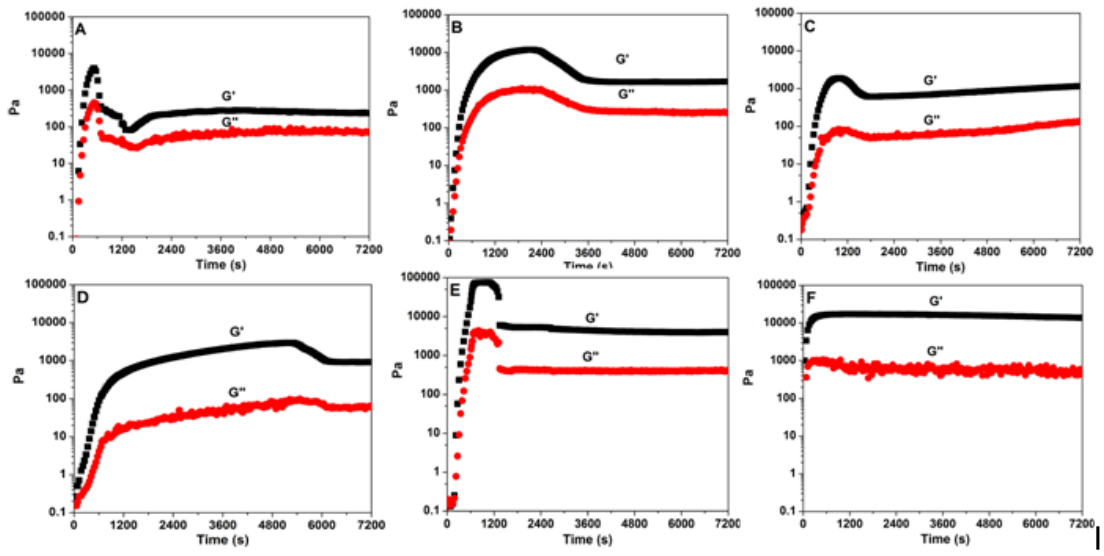

Fig. S-13. Rheological measurement in dynamic time sweep mode for PBS (pH=7.4) solutions containing 1.0 wt% of different precursors and 4.0 equiv. of GSH (strain = 1.0% and frequency = 1.0 rad/ s) at 37^0C: A) Dex-K(Taxol)E-gel, B) AcK(Taxol)E-gel, C) Taxol-K(Ac)E-gel, D) Taxol-E-gel, E) Taxol-R-gel, and F) Taxol-S-gel

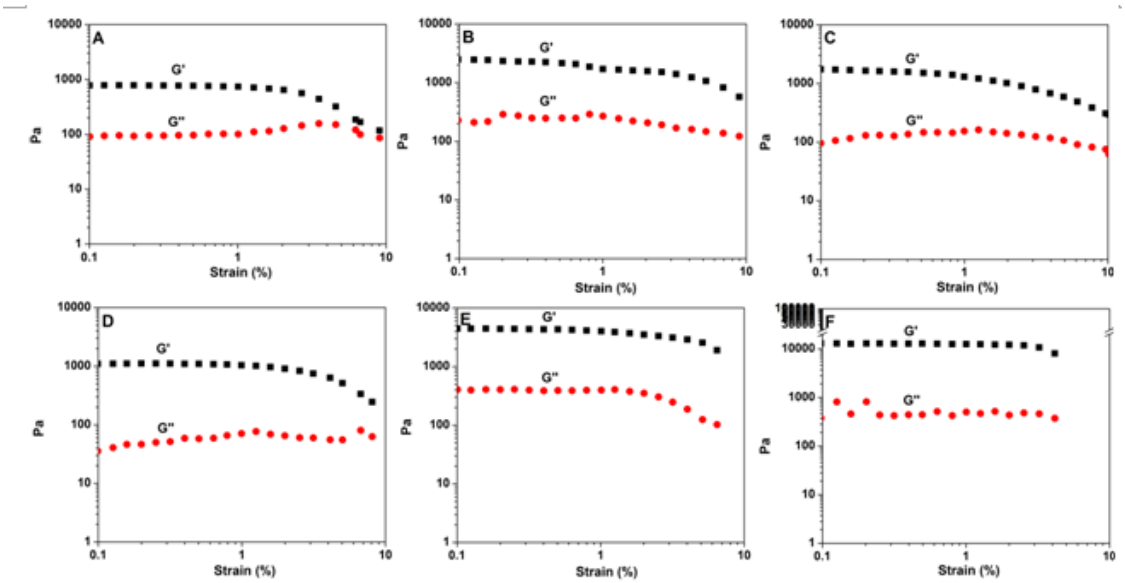

Fig. S-14. Dynamic strain sweep of different kinds of hydrogels (frequency = 1.0 rad/s) at 37^0C: A) Dex-K(Taxol)E-gel, B) AcK(Taxol)E-gel, C) Taxol-K(Ac)E-gel, D) Taxol-E-gel, E) Taxol-R-gel, and F) Taxol-S-gel

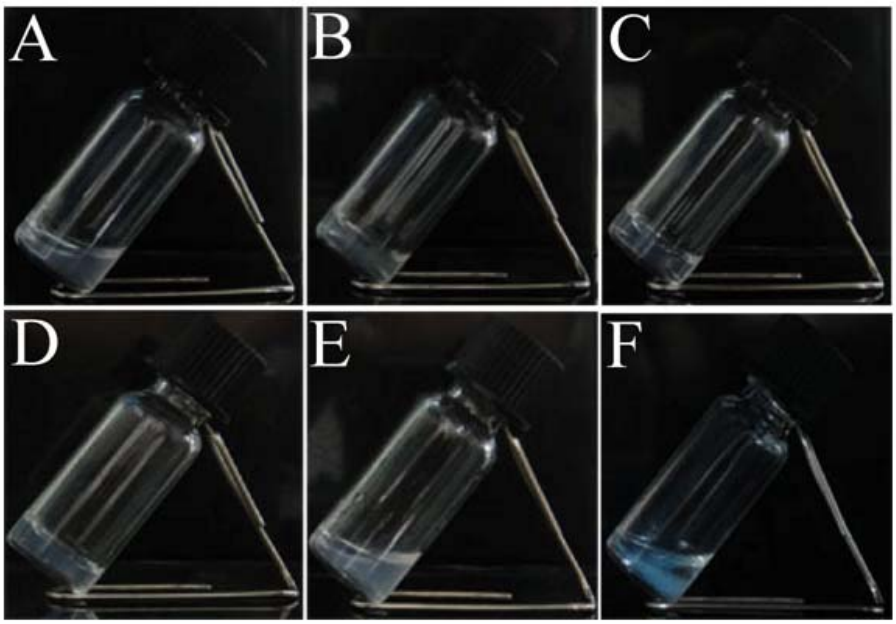

Fig S-15. Optical images of hydrogels after injection through a 1 mL syringe: A) Dex-K(Taxol)E-gel, B) AcK(Taxol)E-gel, C) Taxol-K(Ac)E-gel, D) Taxol-E-gel, E) Taxol-R-gel, and F) Taxol-S-gel

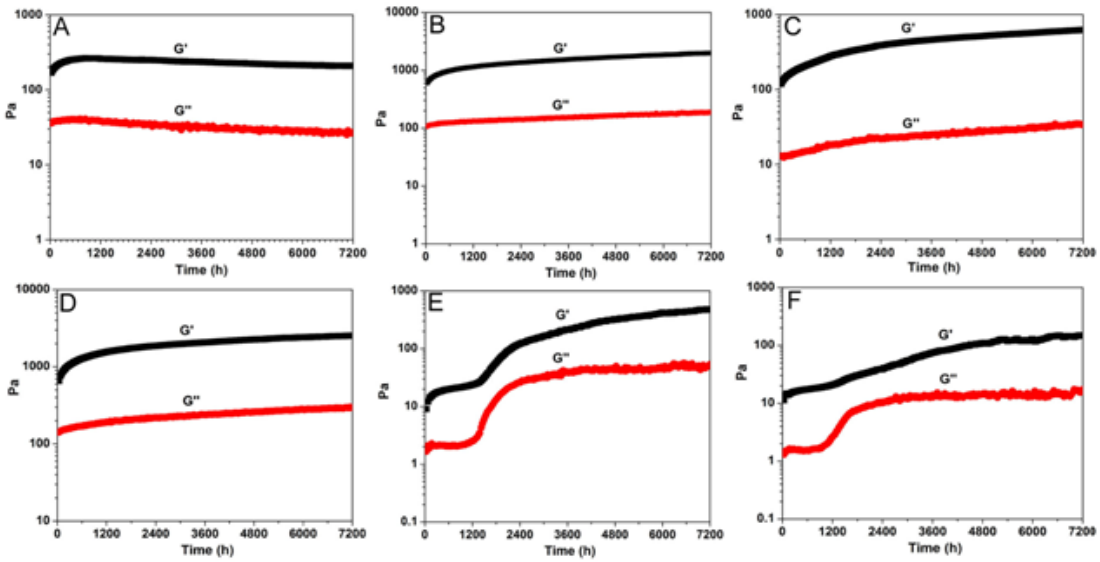

Fig. S-16. Rheological measurement in dynamic time sweep mode six hydrogels after injection through a 1 mL syringe at 37^0C: A) Dex-K(Taxol)E-gel, B) AcK(Taxol)E-gel, C) Taxol-K(Ac)E-gel, D) Taxol-E-gel, E) Taxol-R-gel, and F) Taxol-S-gel

Release profile of anti-cancer drugs:

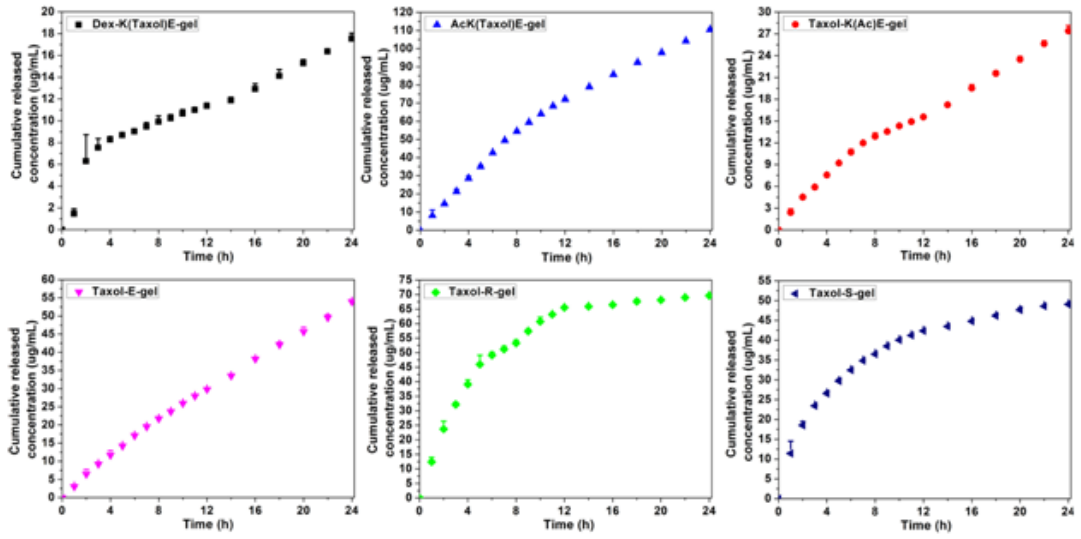

Fig.S-17. Accumulative Taxol release profile of different kinds of hydrogels at 37 ℃ in 100 mM PBS buffers (pH=7.4)

Cytotoxicity measurement:

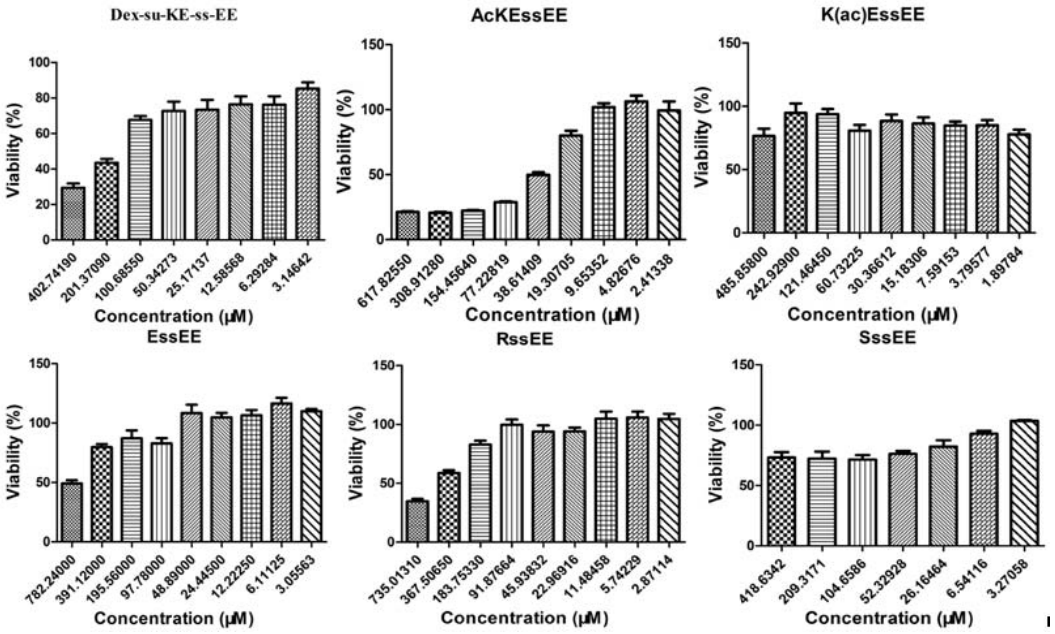

Fig. S-18. Cytotoxicity measurement of different peptides

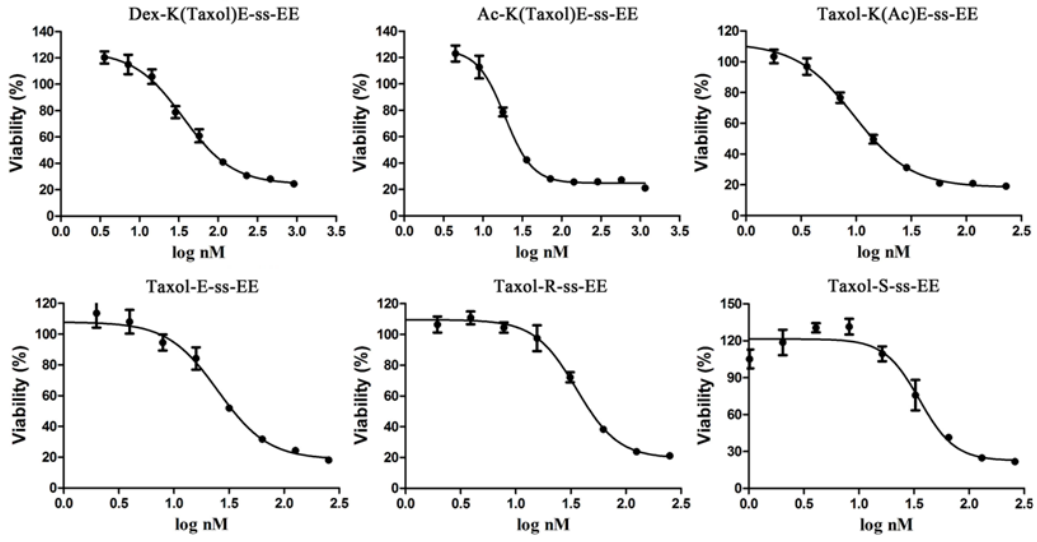

***Figure S*-19.** Representative congress curve of cell inhibition of different kinds of precursors

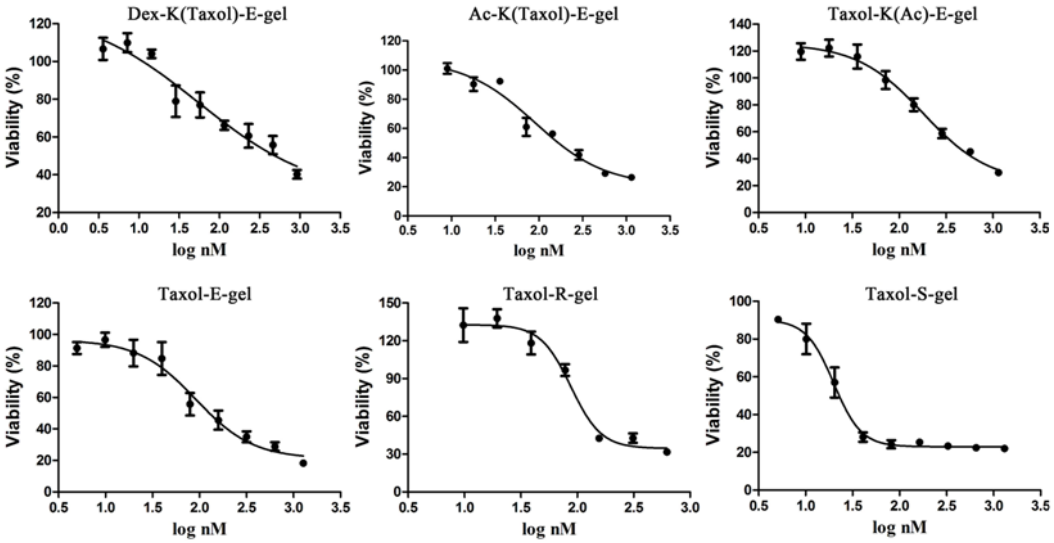

Fig. S-20. Representative congress curve of cell inhibition of different kinds of hydrogels

References:

1. **Mao, L.; Wang, H.; Tan, M.; Ou, L.; Kong, D.; Yang, Z., Conjugation of two complementary anti-cancer drugs confers molecular hydrogels as a co-delivery system. *Chemical Communications* 2012, *48* (3), 395-397.**