Supplementary Information

1) Cell viability test:

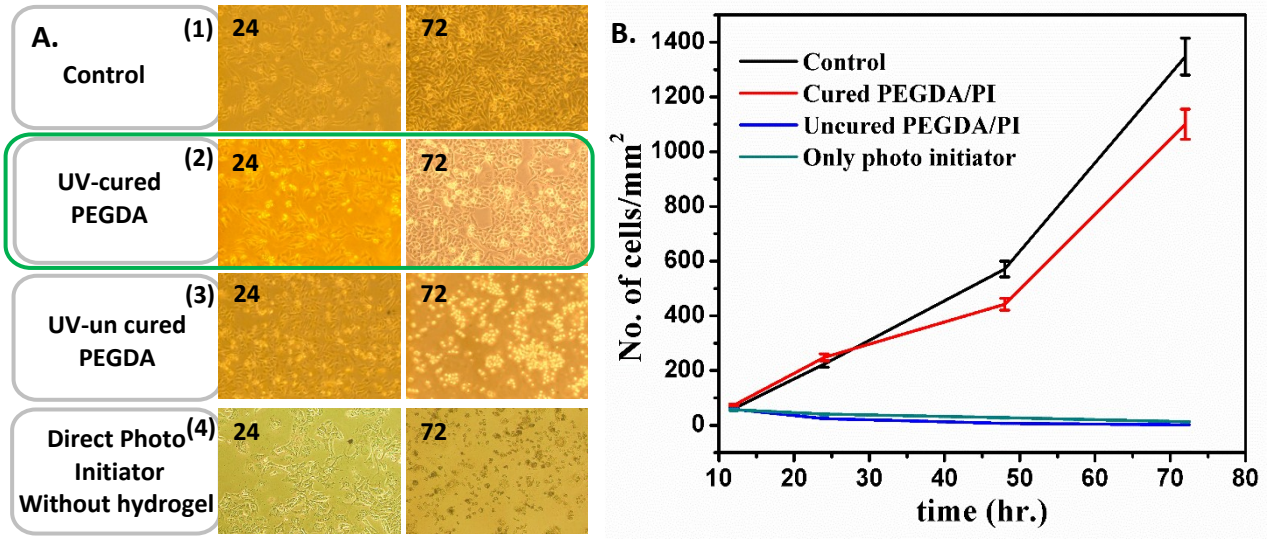

Fig. 1 Cell viability assay to test the biocompatibility of PEGDA hydrogel against HeLa cells. The cells were incubated with cured or un-cured PEGDA for 72 hrs. Bright-field microscopy images of the HeLa cells were taken after 24 hrs. and 72 hrs. Incubation with UV cured, uncured hydrogel and bare photo initiator without hydrogel (A). Graphical representation of HeLa cell viability over 72 hrs. (B).

Firstly, to test biocompatibility of PEGDA/PI against HeLa cells, we used UV-cured and un-cured PEGDA/PI for cell incubation with a comparison to the control (without PEGDA/PI). Interestingly, UV-cured PEGDA/PI shows more acceptable range of cell viability i. e. approximately 1100 cells/mm^2 (Fig. 1(A)(2)) than un-cured PEGDA/PI (Fig. 1(A)(3)) after 72 hours of incubation. However, some researchers found that, direct contact of free radicals frequently causes cytotoxicity,[51,52] therefore, the plausible reason we thought is, photo initiator is not fully polymerized with in un-cured PEGDA/PI like in UV cured PEGDA/PI. So, free radicles from un-polymerized photo initiator in un-cured PEGDA may directly deteriorate cell viability. Reactive monomers formed during polymerization can suppress formation of free radicles, which leads to higher cell viability.[49] To cross verify this phenomenon, we tested pure PI directly contacting with the same cell line and the result in (Fig. 1(A)(4)) echoes the aforementioned suggestion. The graphical representation in (Fig. 1(B)) is evident for the above explanation: both of un-cured PEGDA/PI and pure PI have high cell toxicity. However, pure PI is a little more toxic than un-cured PEGDA/PI, which may attribute to that photo initiator in un-cured hydrogel may not be completely diffused out and exposed to the cell line. The 96 welled plates were used for cell viability test, 15,000 cells/ml cell concentration were prepared and from that 100 µl cell solution is inoculated in to each well. Further, cells were stained with trypan blue to count dead and live cells at 24, 48 and 72 hrs. Finally, live cells were counted from 1mm^2 (3 different areas) area under microscope. So, each data point (Fig. 1) represents average of 3 different area in same well.

2) Releasing test by using Rhodamine 6G:

To understand the drug releasing rate of UV-cured PEGDA hydrogels at different prepared concentrations and curing times, Rhodamine 6G (R6G) releasing test with different concentrations (1mM, and 0.1mM) was performed in (Fig. 3). The increasing fluorescence intensity with respect to time (from 15 seconds to 60 seconds) represents the more releasing rate of R6G in both the concentrations (Fig. 3).

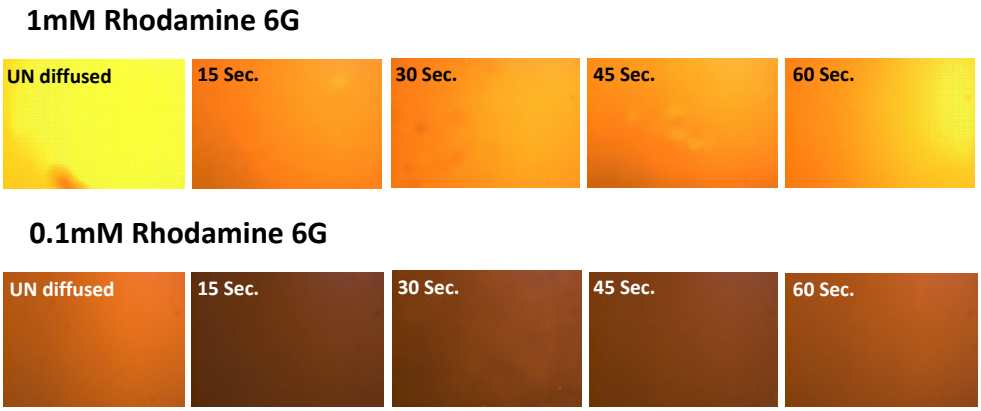

Fig. 2 Rhodamine 6G releasing rate.