Electronic Supplementary Material (ESI) for Soft Matter.

Multiple stimuli-responsive selenium-functionalized biodegradable starch-based hydrogels

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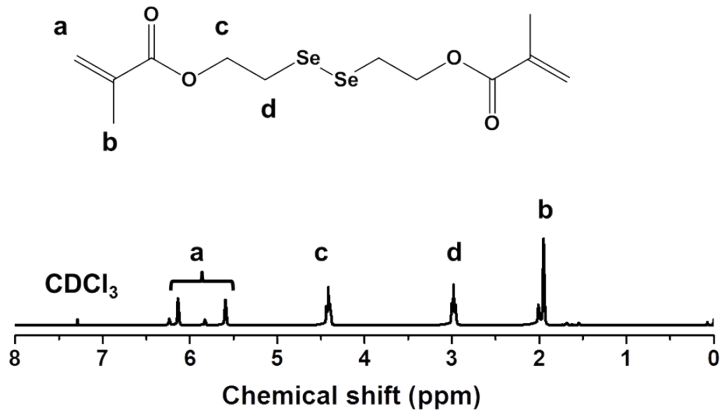

Fig. S1 ^{1}H-NMR spectrum of di(ethylene methacrylate) diselenide.

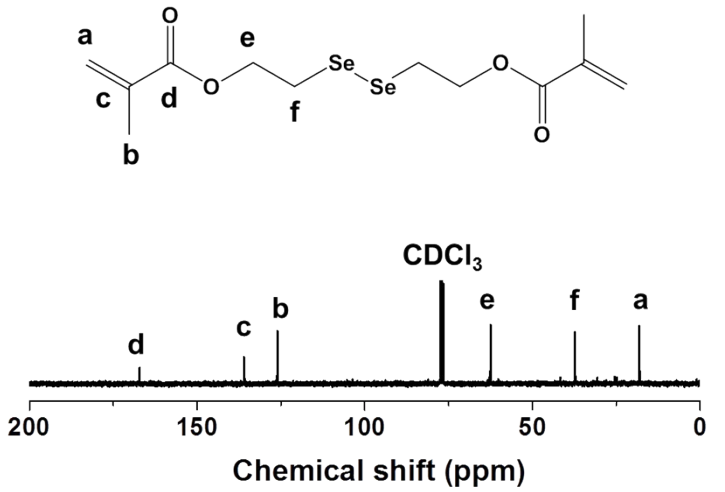

Fig. S2 ^{13}C-NMR spectrum of di(ethylene methacrylate) diselenide.

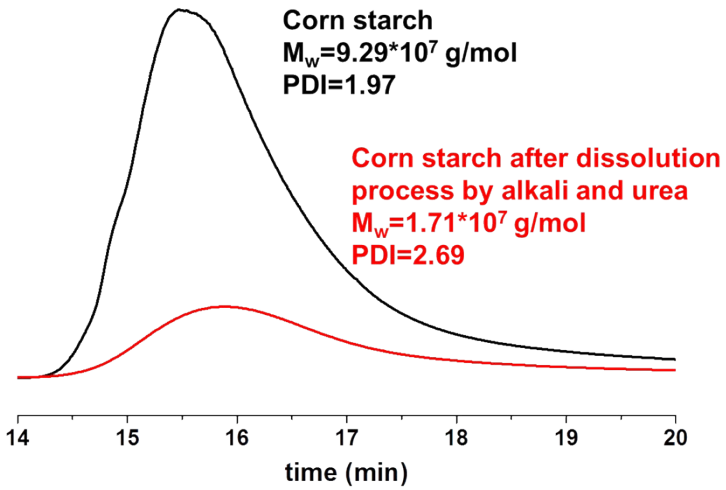

Fig. S3 GPC results of the pristine core starch and the dissolved core starch by alkali and urea system.

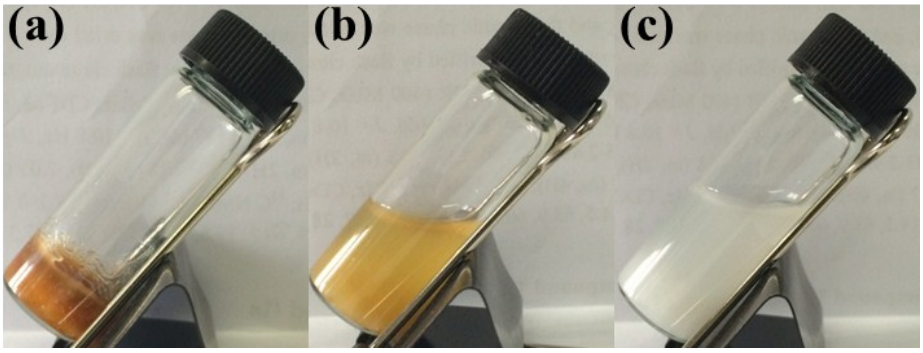

Fig. S4 The optical pictures of starch-based hydrogels (a), and the hydrogels after the reduction by 50 mM DTT solution (b) and after the oxidation by 0.1 wt% H_2O_2 solution (c), respectively.

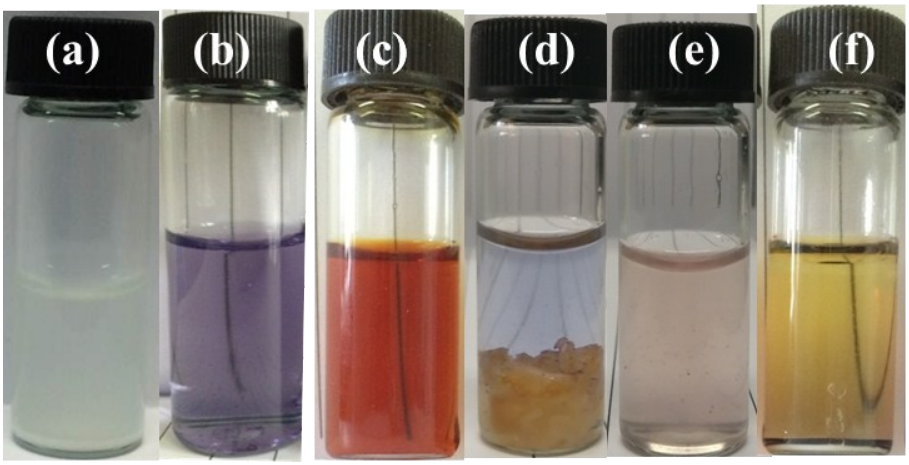

Fig. S5 Optical pictures of starch (a), iodine reaction of starch before (b) and after the addition of α-amylase solution for 24 hrs (c), iodine reaction of starch-based hydrogels before (d) and after the addition of α-amylase solution for 12 hrs (e) and 24 hrs (f).

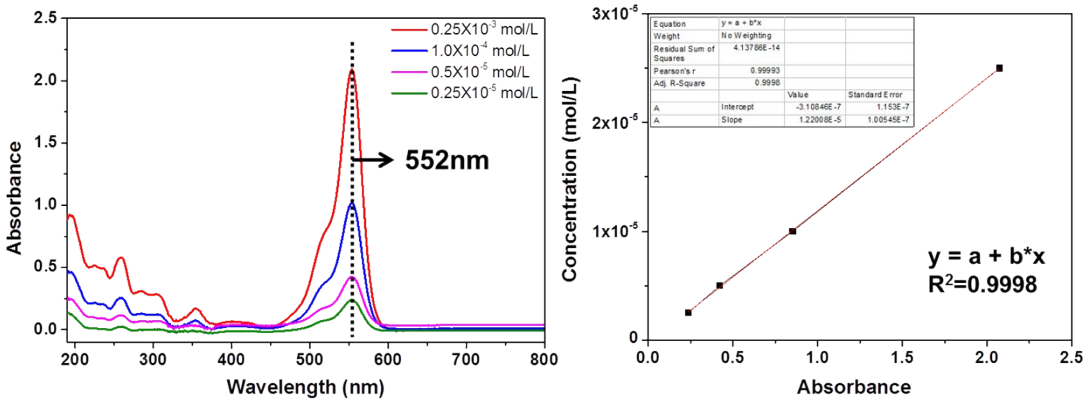

Fig. S6 The calibration curve of the absorbance intensity at the wavelength of 552 nm and different concentrations of RB solutions.

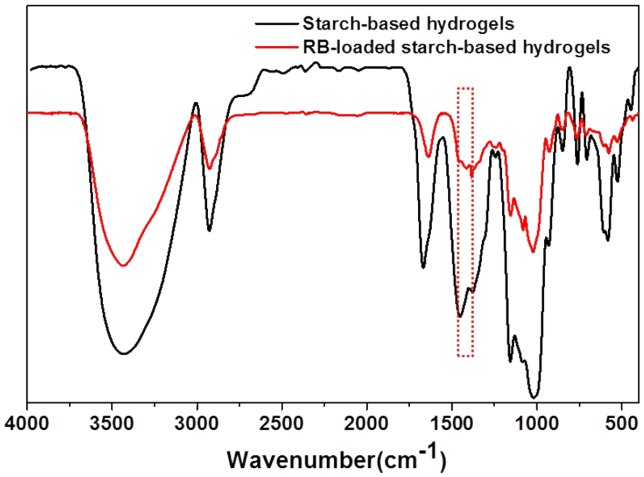

Fig. S7 FT-IR spectra of starch-based hydrogels and RB-loaded starch-based hydrogels

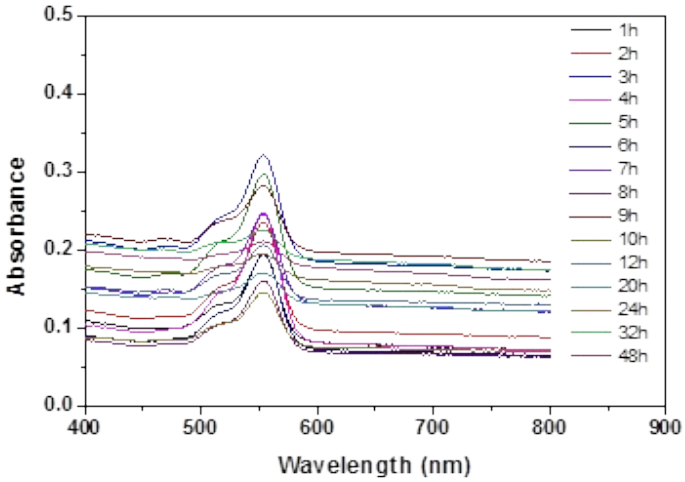

Fig. S8 Blank test of UV-vis spectra of RB released from starch-based hydrogels at different periods.

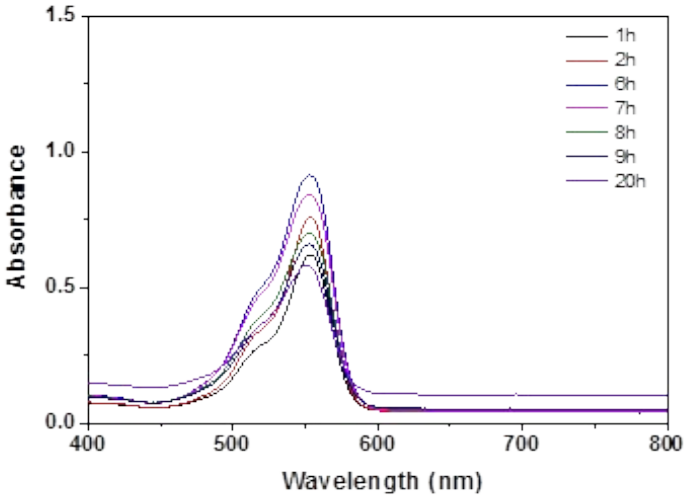

Fig. S9 UV-vis spectra of RB released from starch-based hydrogels after the oxidation at different periods.

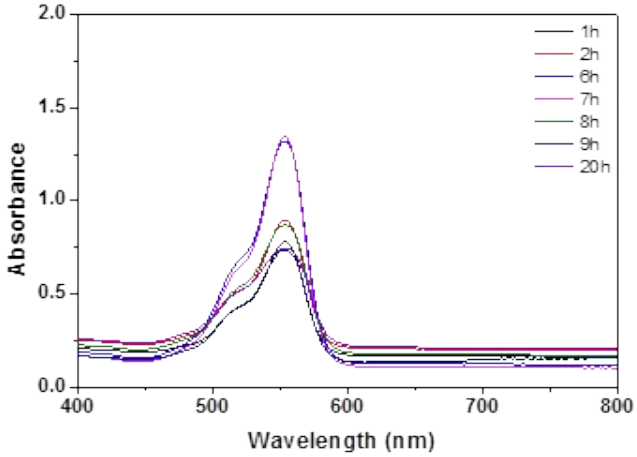

Fig. S10 UV-vis spectra of RB released from starch-based hydrogels after the reduction at different periods.

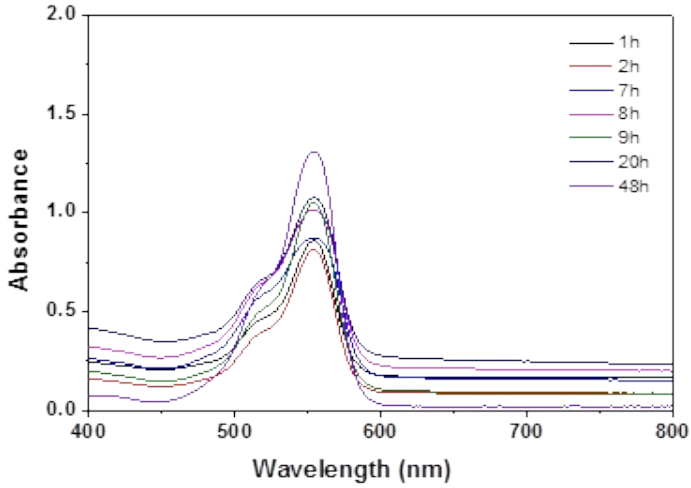

Fig. S11 UV-vis spectra of RB released from starch-based hydrogels at different enzymatic hydrolysis periods.

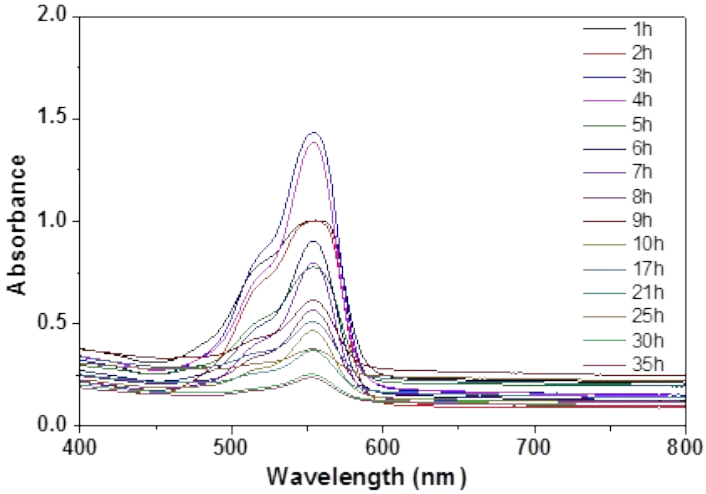

Fig. S12 UV-vis spectra of RB released from starch-based hydrogels under the mixture ofα-amylase and DTT solutions at different periods.

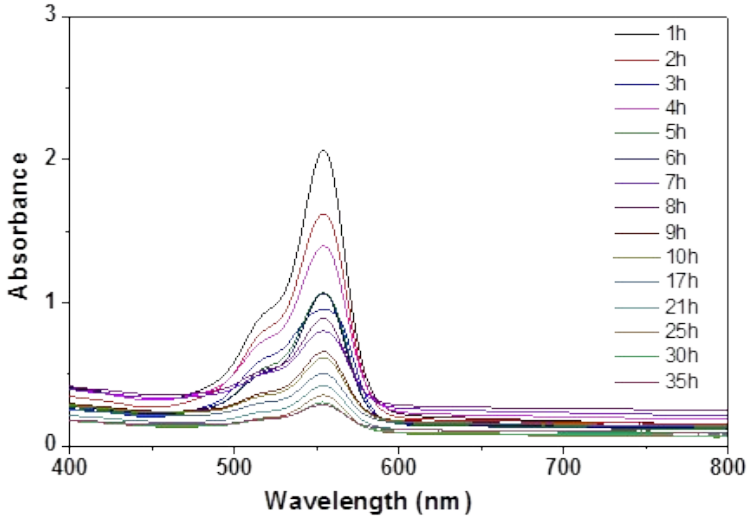

Fig. S13 UV-vis spectra of RB released from starch-based hydrogels under the mixture ofα-amylase and H_2O_2 solutions at different periods.