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Title: Synthesis of a chitosan-based photo-sensitive hydrogel and its biocompatibility and biodegradability

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1 **Synthesis of a chitosan-based photo-sensitive** 2 **hydrogel and its biocompatibility and biodegradability**

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11 **Highlights**

12 Photo-sensitive azidehydroxyethyl chitosan (AZ-HECTS) was synthesized.

13 AZ-HECTS solution resulted in an insoluble hydrogel by 254nm UV irradiation for 90s.

14 AZ-HECTS hydrogels possessed favorable biocompatibility and biodegradability.

15 AZ-HECTS hydrogels were loaded with anticoagulant drugs heparin (Hep).

16 AZ-HECTS-Hep hydrogels showed positive effect on HUVEC growth and VEGF
17 expression.

18

19

20 **Abstract**

21 Hydroxyethyl chitosan (HECTS) is one of the most important water
22 soluble derivatives of chitosan. In this study, photo-sensitive azidehydroxyethyl
23 chitosan (AZ-HECTS) was synthesized with grafting degree 3.4%, and its
24 water solution resulted in an insoluble hydrogel by 254nm UV irradiation for
25 90s. AZ-HECTS hydrogels, with water absorption 86.21%, had little impact on
26 growth of mouse fibroblast (L929) and presented good cell biocompatibility.
27 Obvious sudden degradation stage, slow degradation stage and no
28 apparent toxicity was observed after AZ-HECTS hydrogels implanted into rats,

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