Construction of *D-α*-Tocopheryl polyethylene glycol succinate/PEO core-shell nanofibers on blood-contacting surface to reduce the hemolysis of preserved erythrocyte

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1. Morphology of electrospun fibers on virgin SEBS and grafted SEBS

The morphology of electrospun SEBS on virgin SEBS and grafted SEBS was characterized by a field-emission scanning electron microscopy (SEM, Sirion-100, FEI, USA) and a transmission electron microscopy (TEM, JEM1011, Japan). As shown in Fig. S1, there were slight differences between the morphology of electrospun fibers on virgin SEBS and grafted SEBS. The result showed that the grafted layer has slight effects on the morphology of electrospun fibers.

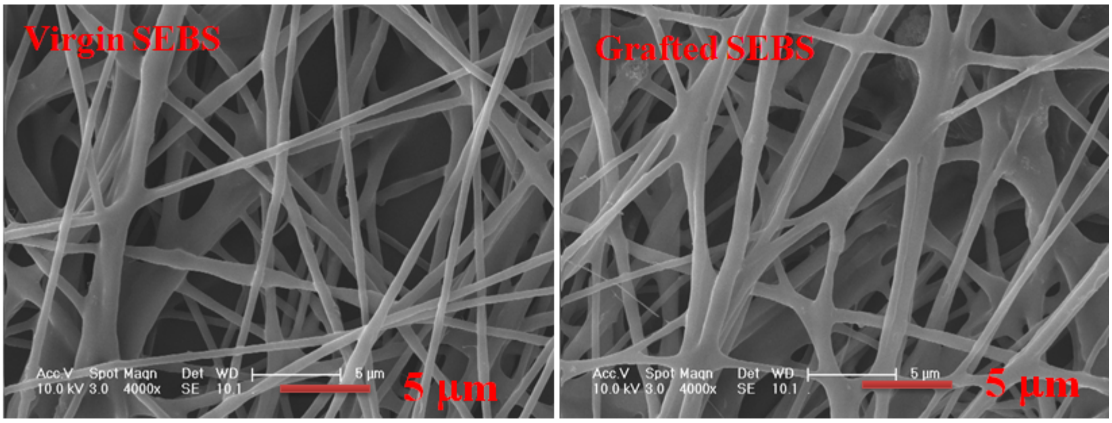

Fig. S1 Morphology of electrospun fibers on the virgin and grafted SEBS.

2. The bags made of electrospun SEBS for RBC preservation

The virgin and electrospun SEBS films (4 cm × 4 cm) were made into 0.4 mL bags, respectively. After sterilization with ethanol for 24 h and drying, 0.2 mL RBCs were transferred to the bags and preserved at 4 °C after sealing. The sealing was performed in an aseptic tank with a sealing machine. To prevent the potential damage of sealing to the preserved RBCs, the 0.4 mL bag was filled with 0.2 mL RBCs, then the bags was closed with a hemostatic forceps at the top of bag (about 3/4 height of bag), followed by sealing of bag margin with a sealing machine. The principle of sealing electrospun SEBS bag by a sealing machine is based on hot compression with mechanical pressure. The bags were shown in Fig. S2. These bags showed the potentials to substitute the toxic polyvinylchloride bags for blood preservation.

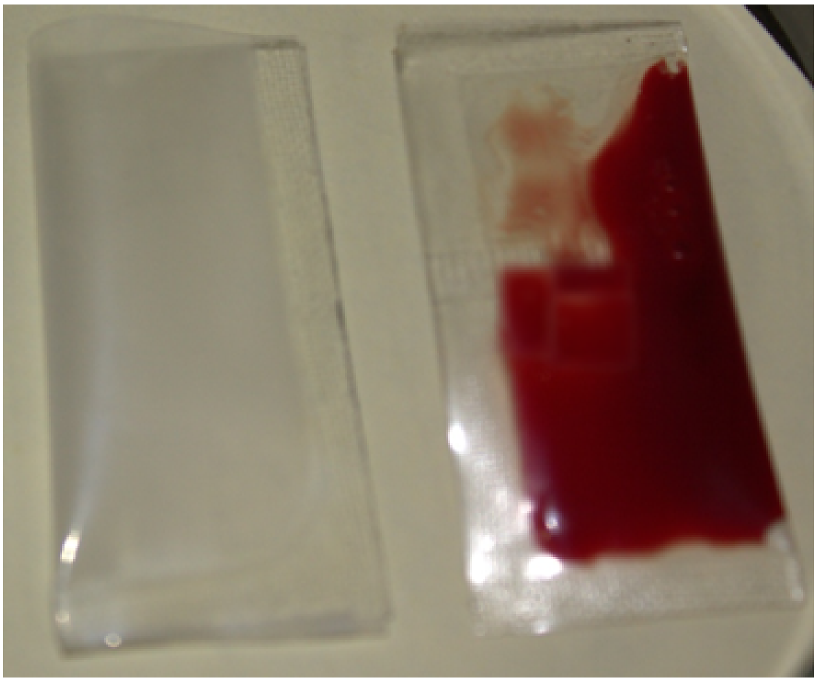

Fig. S2 The bags made by electrospun SEBS for RBCs storage. (left) the bag made by electrospun SEBS; (right) preserved RBCs in the bag.

3. The Release of TPGS in the Distilled Water

The release of TPGS form the core-shell structured nanofibers with different loading amount of TPGS in the distilled water was investigated at 4 °C (Fig. S3). The TPGS/PEO fiber density on SEBS surface was 0.2±0.01 mg cm^{-2} and the ratio of

TPGS to PEO was 1/5 and 2/5, respectively. The initial release rate of TPGS with high loading amount was found to be higher than that with low loading amount, but they both approached the equilibrium at about 80% initial loading. This result confirmed that the release of TPGS was mainly controlled by the dissolution of PEO nanofibers.

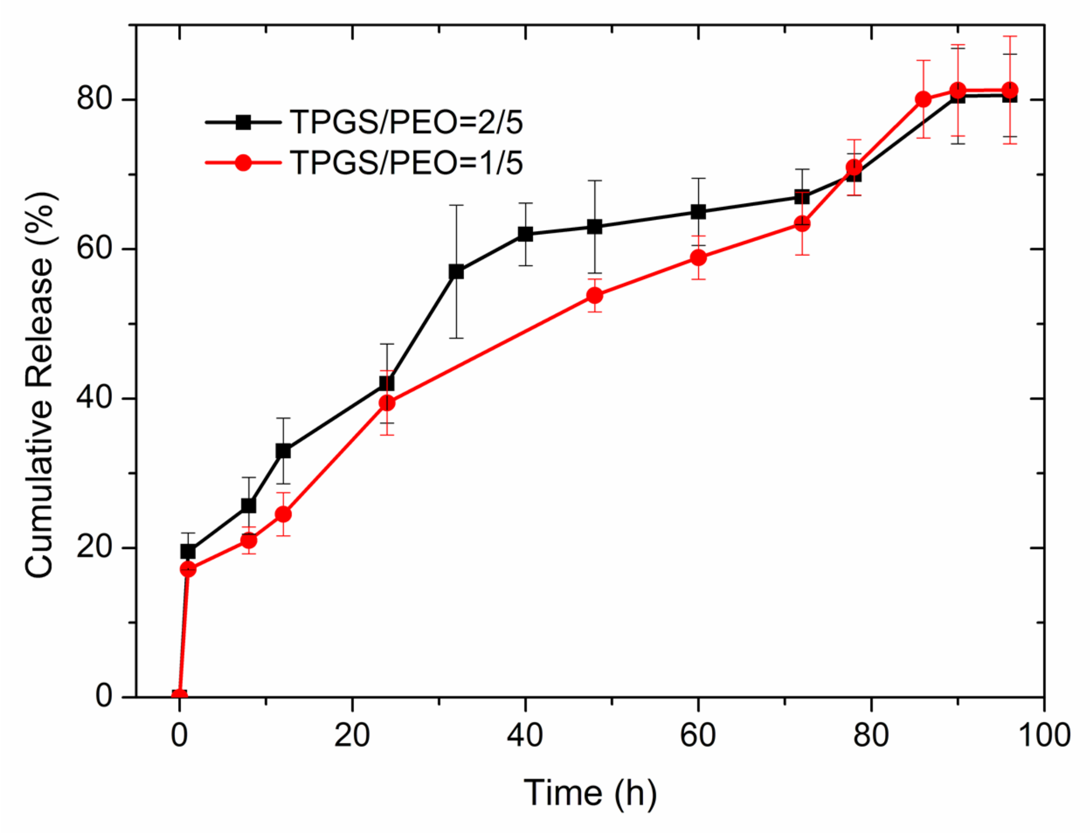

Fig. S3 Release profiles of TPGS from the constructed surface with different initial loading of TPGS. The release profile is normalized to the amount of TPGS initially loaded into PEO fibers. The TPGS/PEO fiber density on SEBS surface was 0.2±0.01 mg cm^{-2}.