Supplemental Materials

Research on the printability of hydrogels in 3D bioprinting

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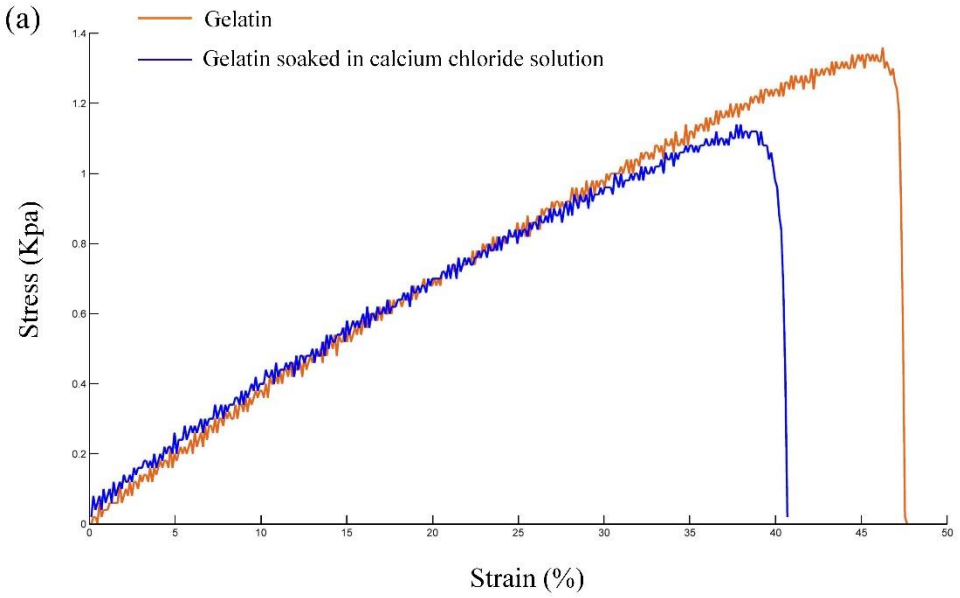

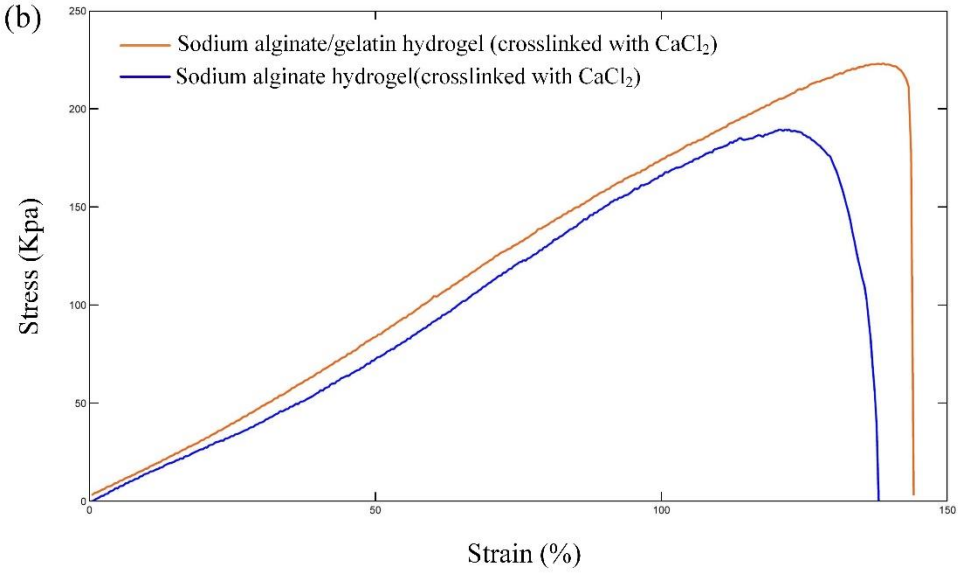

Fig.S1 Stress-strain curves of different materials. (a) Stress-strain curves of gelatin and gelatin soaked in calcium chloride solution. (b) Stress-strain curves of sodium alginate/gelatin hydrogel (crosslinked with CaCl2) and sodium alginate hydrogel (crosslinked with CaCl2).

Tensile strength of different materials shown in Fig.S1 was performed by making uniaxial measurements using tension gauge DS-5N (ZHIQU, CHINA) at room temperature. Gelatin gels were cut into bone-shape specimens with a cross-section area of 3.5×1.5 mm after they were took from the environment of 4°C immediately. They were clamped horizontally, with a gauge length of 25mm and tested at a constant rate of 1.33 mm/s. All the samples were stretched until failure. Stress was calculated by dividing the force generated during extension by the initial cross-sectional area. While the sodium alginate hydrogel and sodium alginate/gelatin hydrogel were cut into bone-shape specimens with a cross-section area of 3.5×1.5 mm after they were crosslinked with $CaCl_2$ at room temperature.

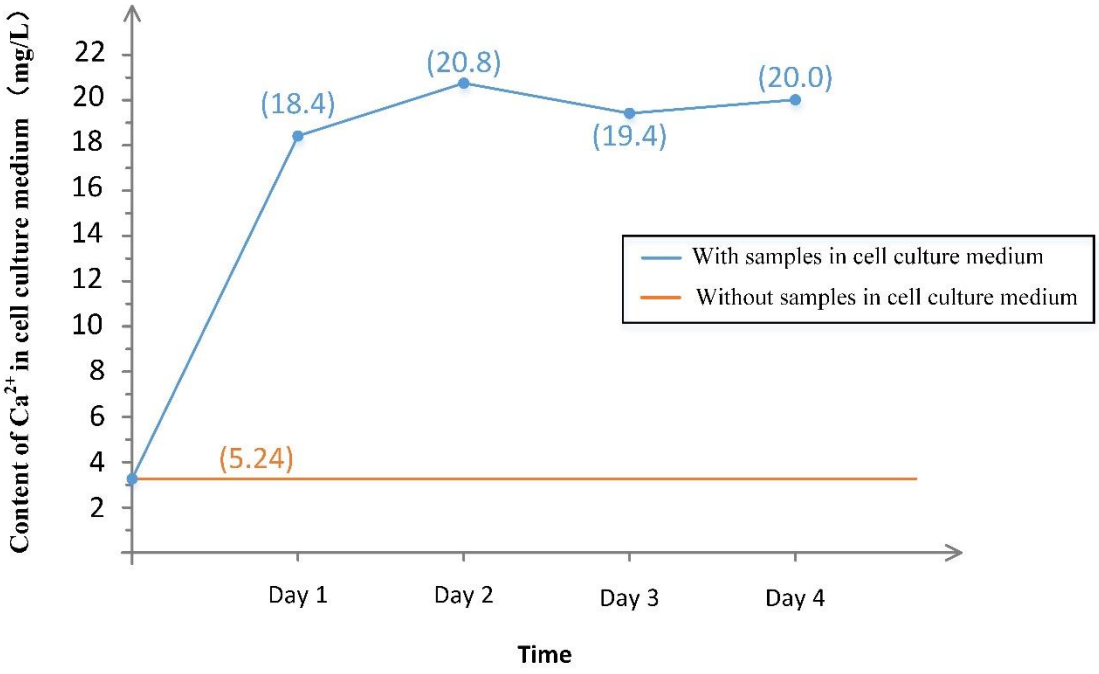

Fig.S2 The content of Ca^{2+} in cell culture medium in 4 days.

The experiment of concentration of calcium ion (Ca^{2+}) shown in Fig.S2 were proceeded as follows. Mixture with 2.5% SA and 8% gelatin was prepared as described in the paper. The structures and the creation method of the samples were in the same as in the paper (Fig.13b). Then the samples were cultured in 10ml MEM with 10% fetal bovine serum, 1% penicillin and streptomycin in 37°C, 5% CO_2 environment. The cell culture medium without samples in it was prepared as the control group. The result of the experiment was obtained using Atomic Absorption Spectrometer HITACHI 180-50 as shown in Fig.4. We found the content of Ca^{2+} in cell culture medium increased a lot after 24h. However, it was increased very few and became stable at the concentration of 20mg/L in the following three days.