Supplementary data

The following are the supplementary data to this article:

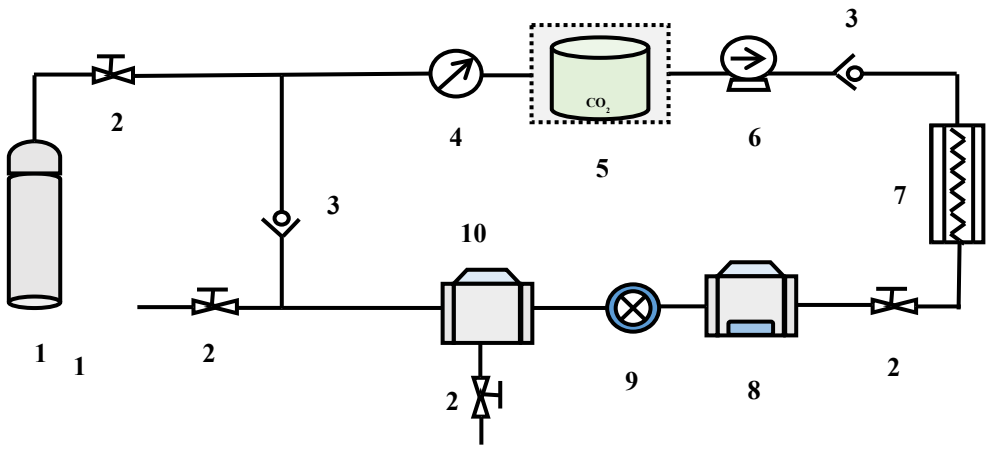

Fig. S1. Supercritical impregnation set-up: (1) CO_2 bottle, (2) Valve, (3) One-way valve, (4) Pressure gauge, (5)Cooling bath, (6) Liquid pump, (7) Heat exchanger, (8) Pressure-resistant vessel, (9) Counterbalance valve, (10) Separation pot.

The supercritical impregnation set-up used in the study is schematically represented in Fig. S1. It mainly consists of a CO_2 bottle, liquid pump, pressure-resistant vessel, pressure gauges, separation pot, valves, and counterbalance valve. The experimental procedure was as follows. Five hundred milligrams of RFP was dissolved in 100 ml of acetone; then, 0.5 g of HMFNs was dispersed in this solution, and the suspension was sonicated for 5 min. Subsequently, the mixture solution placed in the pressure-resistant vessel. The vessel was closed and heated to desired operational temperature, and then filled with CO_2 using the high pressure pump until the desired operational pressure was reached and maintain the pressure for the duration of the experiment.

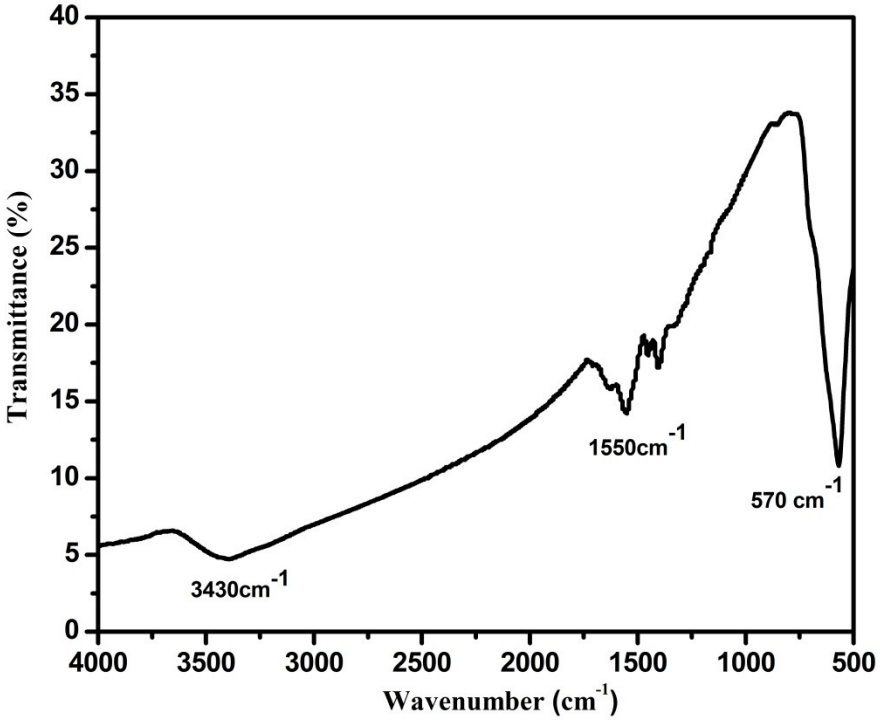

Fig. S2. FT-IR spectrum of HMFNs.

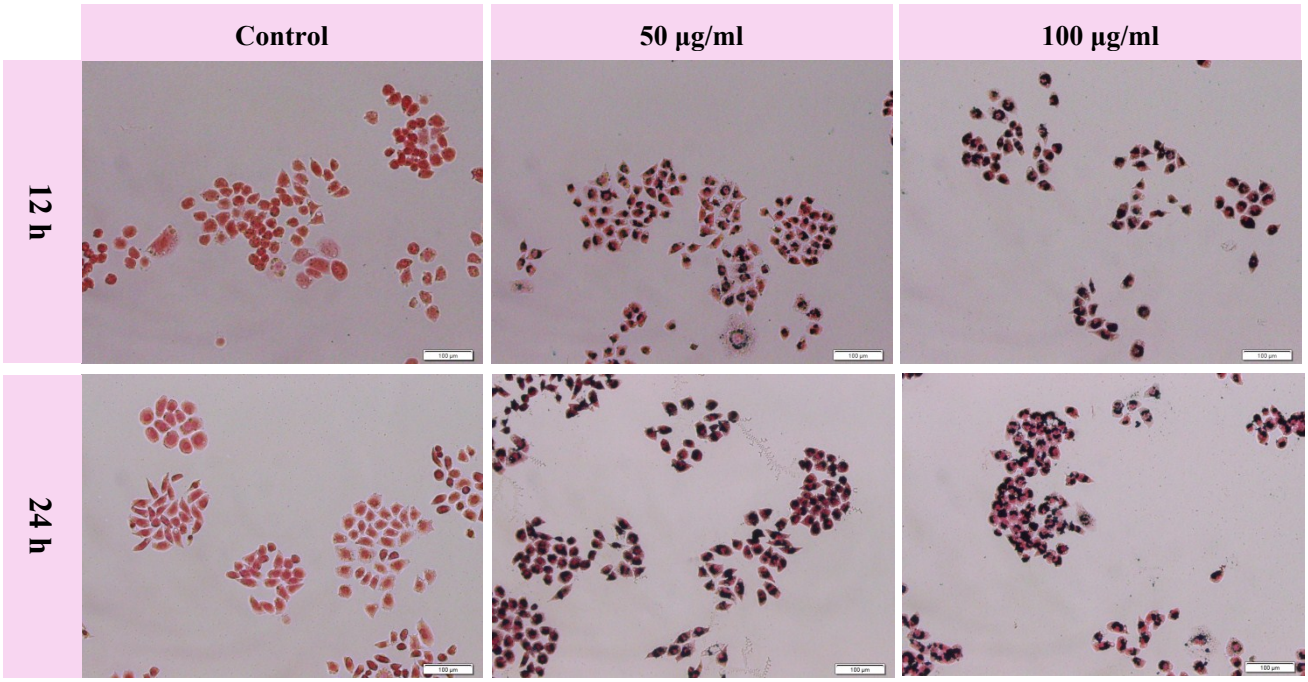

Fig. S3. Prussian blue staining of L929 cells treated with the nanocarrier (50 and 100 µg/ml) and control cell media without the carrier for 12 and 24 h.

We investigated the cellular internalization of the HMFNs nanocarrier. As shown in Fig. S3, after 12 h of incubation of the HMFNs nanocarrier with L929 cells, Prussian blue staining was performed to detect the presence of HMFNs in the cells. We did not observe any blue spots in the control cells. In contrast, for the HMFNs nanocarrier, substantial blue staining was observed in almost all cells localized around the cell membrane, which indicated that HMFNs were absorbed into the L929 cell. With the longer incubation time or treated with higher concentration of HMFNs, more blue staining was observed in cells, which indicated that HMFNs were absorbed into the L929 cell is in a dose and time-dependent manner.