pharmaceutics

Supplementary Materials: Electrospray-Based Microencapsulation of Epigallocatechin 3-Gallate for Local Delivery into the Intervertebral Disc

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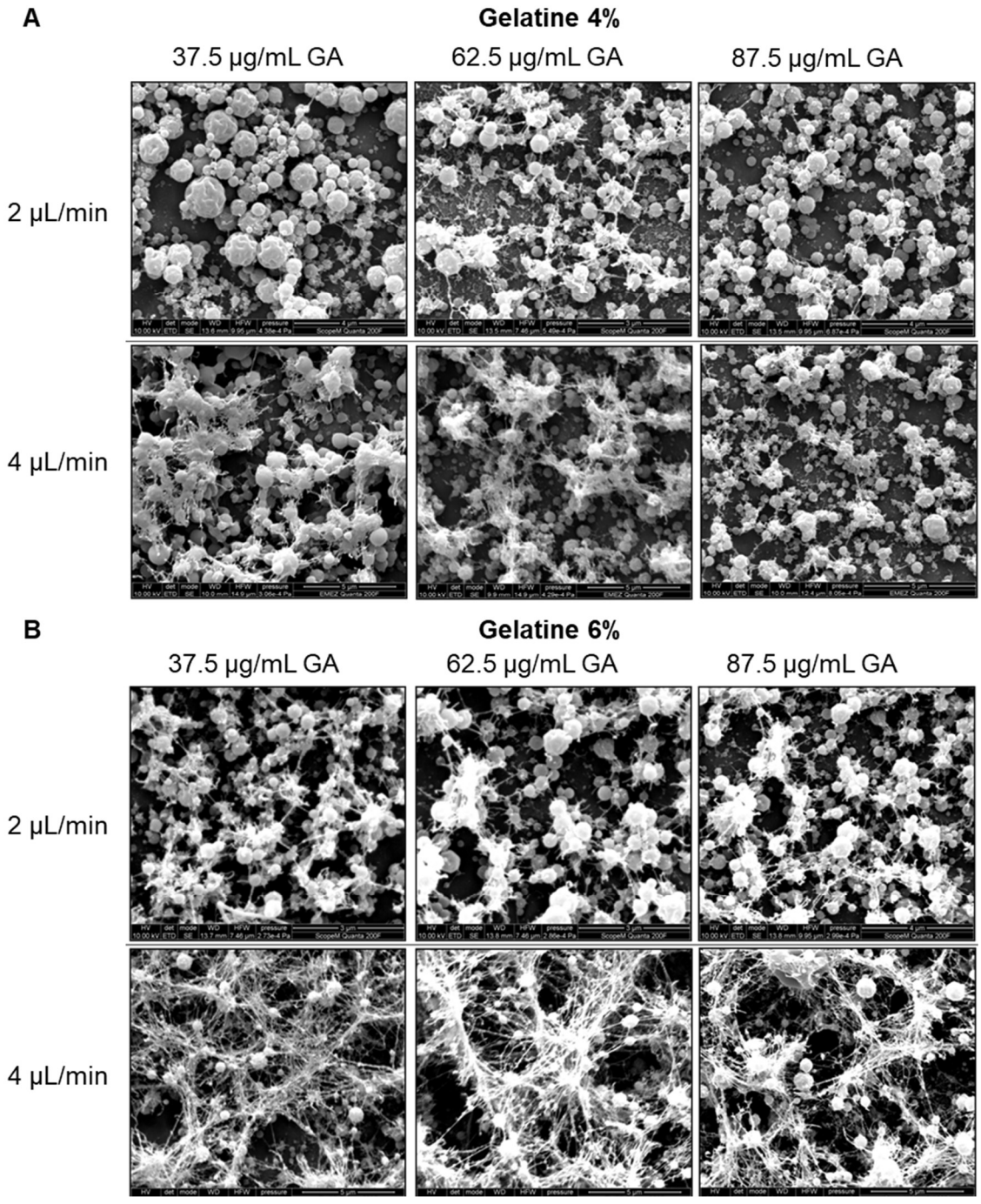

Figure S1. Scanning electron microscopy images of electrosprayed (**A**) 4 % and (**B**) 6 % gelatine particles crosslinked with 37.5 µg/mL, 62.5 µg/mL, and 87.5 µg/mL Glutaraldehyde (GA) and sprayed at flow rates 2 µL/min and 4 µL/min.

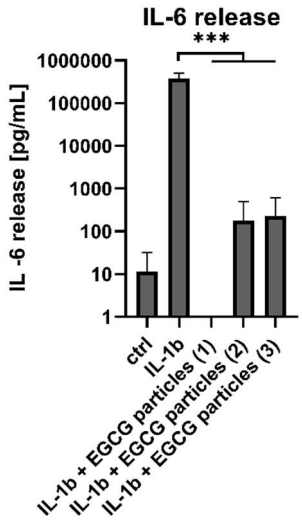

Figure S2. The release of IL-6 from disc cells cultured in 3D for seven days in the presence of 5 ng/mL IL-1β with and without EGCG microparticles (n = 3 repeats, t-test IL-1β vs. IL-1β + EGCG particles, *p < 0.05, ** p < 0.01, ***p < 0.001).

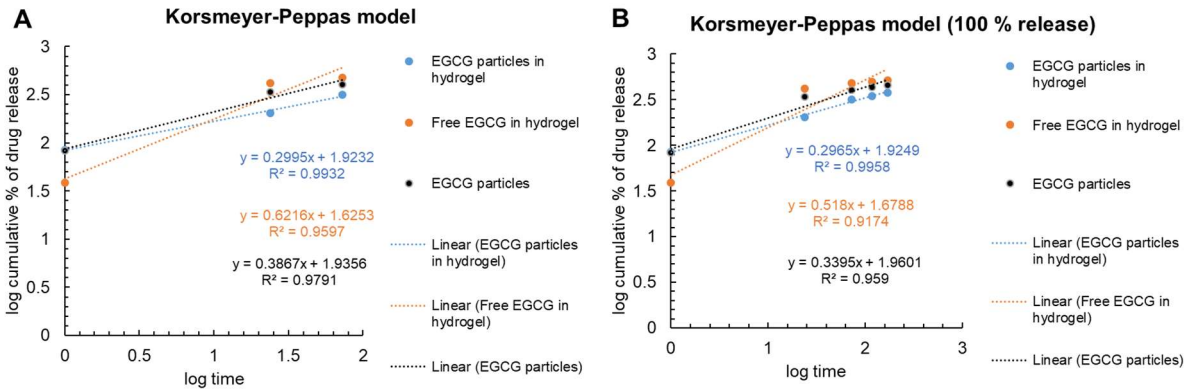

Figure S3. Korsmeyer-Peppas model of drug release kinetics. **(A)** First ~60–80% of EGCG release in each group was plotted as log cumulative % drug release vs. log time. Diffusion coefficient (n) was determined from the respective equations. **(B)** Korsmeyer-Peppas plot for 100% release was shown for comparison. Orange = free EGCG in hydrogel, blue = EGCG particles in hydrogel, black = EGCG particles.

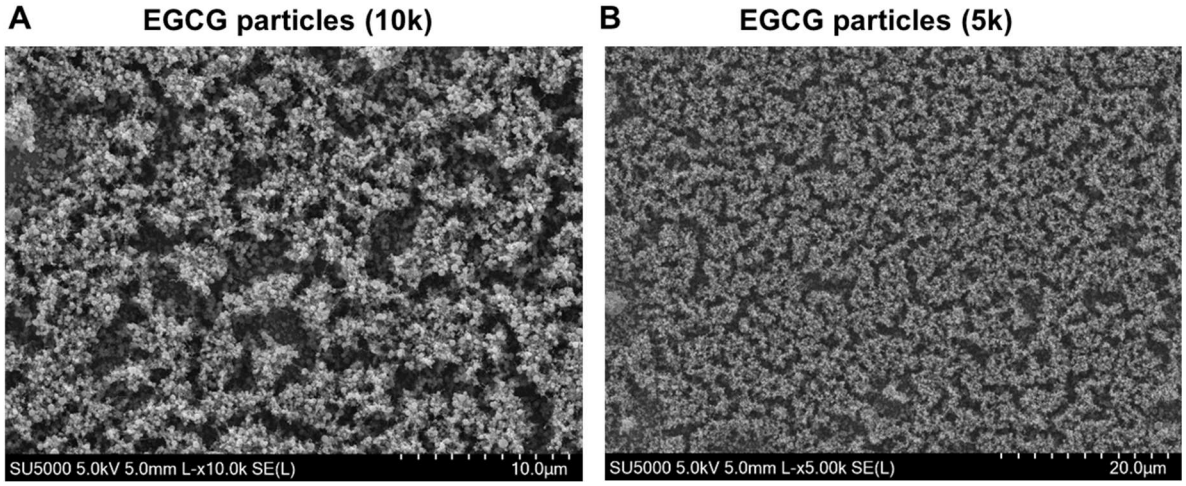

Figure S4. Representative SEM image of EGCG particles produced using NANOSPIDER™ technology in **(A)** 10k magnification and **(B)** 5k magnification.

Table S1. Examined electrospraying parameters (NANOSPIDER™ technology). Heated = the gelatine mix has been heated inside an Erlenmeyer flask attached to a reflux condenser by lowering the flask into an oil bath which was warmed by a heating plate to 110°C with 500 rpm. Cooled = the gelatine mix has been cooled to 4°C in the fridge.

Trial	Gelatine content (%)	Cylinder diameter (mm)	EMW speed (mm/s)	Electrode distance (mm)	Humidity (%)	Temperature (°C)
1	4	0.7	290	250	40	20
2	4	0.5	260	200	40	20
3	4	0.5	600	200	40	20
4	4	0.7	200	200	40	15
5	4	0.7	200	200	40	5
6	10	0.5	200	250	40	11
7	6	0.5	280	250	40	11
8	6	0.5	280	250	10	10
9	6	0.5	280	250	60	10
10	6	0.5	400	250	60	10
11	6	0.5	400	250	60	20
12	5 (heated 24h)	0.5	400	250	40	12
13	5 (heated 48h)	0.5	400	250	40	12
14	4.5	0.5	400	250	40	12
15	5 (cooled at 4°C)	0.5	400	250	40	12
16	10 (heated 48h)	0.5	400	250	40	12
17	7.5 (heated 48h)	0.5	400	250	40	12
18	5 (no NaOH, Tween20)	0.5	400	250	40	12
19	5 (Tween20)	0.5	400	250	40	12
20	10 (heated 36h, Tween20)	0.5	400	250	40	12