Supplementary information

Incorporation of simvastatin in PLLA membranes for guided bone regeneration: effect of thermal treatment on simvastatin release

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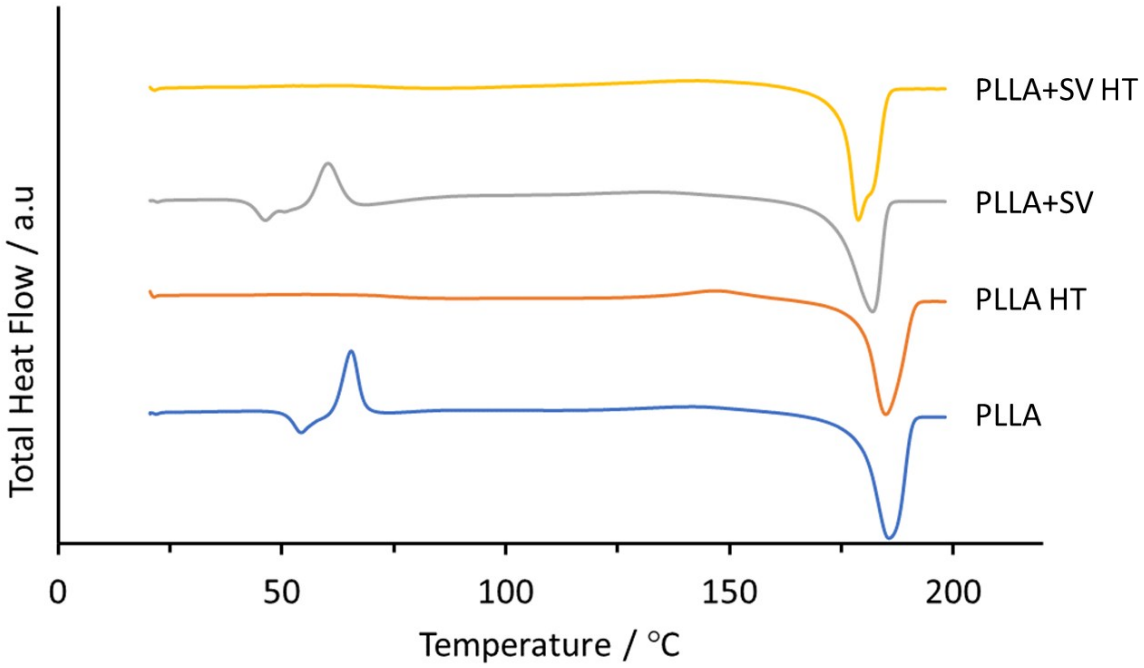


Figure S1. Modulated DSC spectra for the different electrospun membranes.

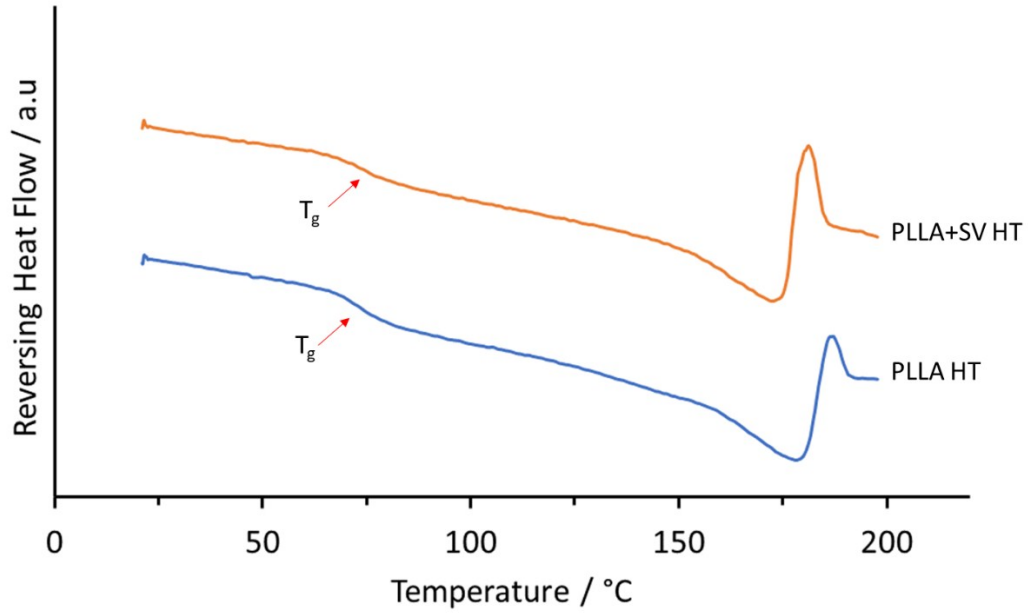


Figure S2. Modulated DSC spectra (reversing signal) for PLLA HT and PLLA+SV HT membranes.

As described in Table S1, SV incorporation led to a small decrease in the values of glass transition temperature (T_g) and cold crystallization temperature (T_{cc}), related to a plasticizing effect common when drugs are added to polymeric materials.[1, 2] Membranes subjected to the thermal treatment showed an increase in T_g values, which is related to a higher organization and rigidity of the polymeric chains, a consequence of the higher crystallinity present on these membranes.

Table S1. Thermal properties of the electrospun membranes.

Group	Crystallinity / %	Tg / °C	Tcc / °C	Tm / °C
PLLA	42.0±7.76	53.6±1.07	66.2±0.62	185.8±0.15
PLLA HT	58.3±4.40	73.1±0.32	------	184.8±0.21
PLLA+SV	38.4±3.04	46.3±0.12	60.6±0.15	182.1±0.06
PLLA+SV HT	61.5±1.06	73.3±1.04	------	178.8±0.10

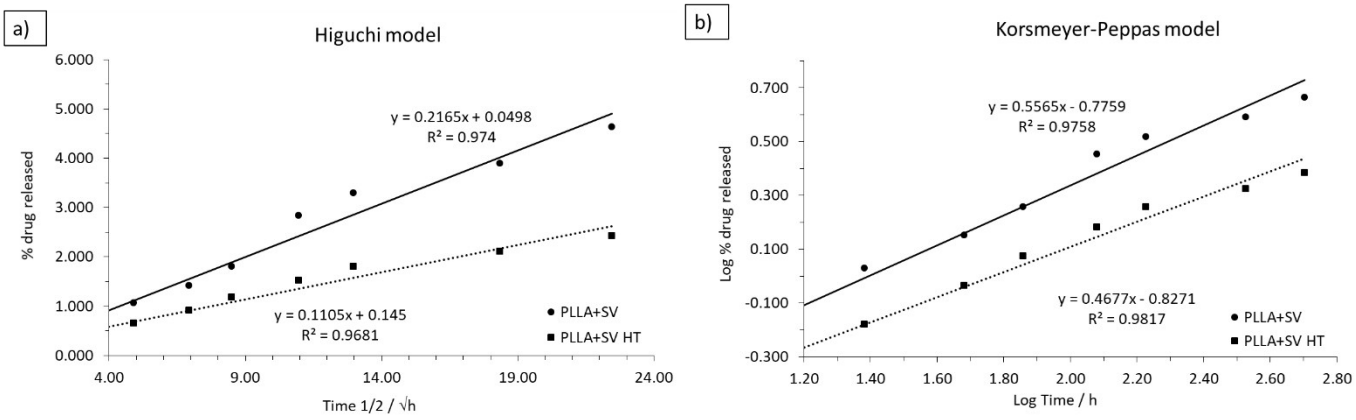
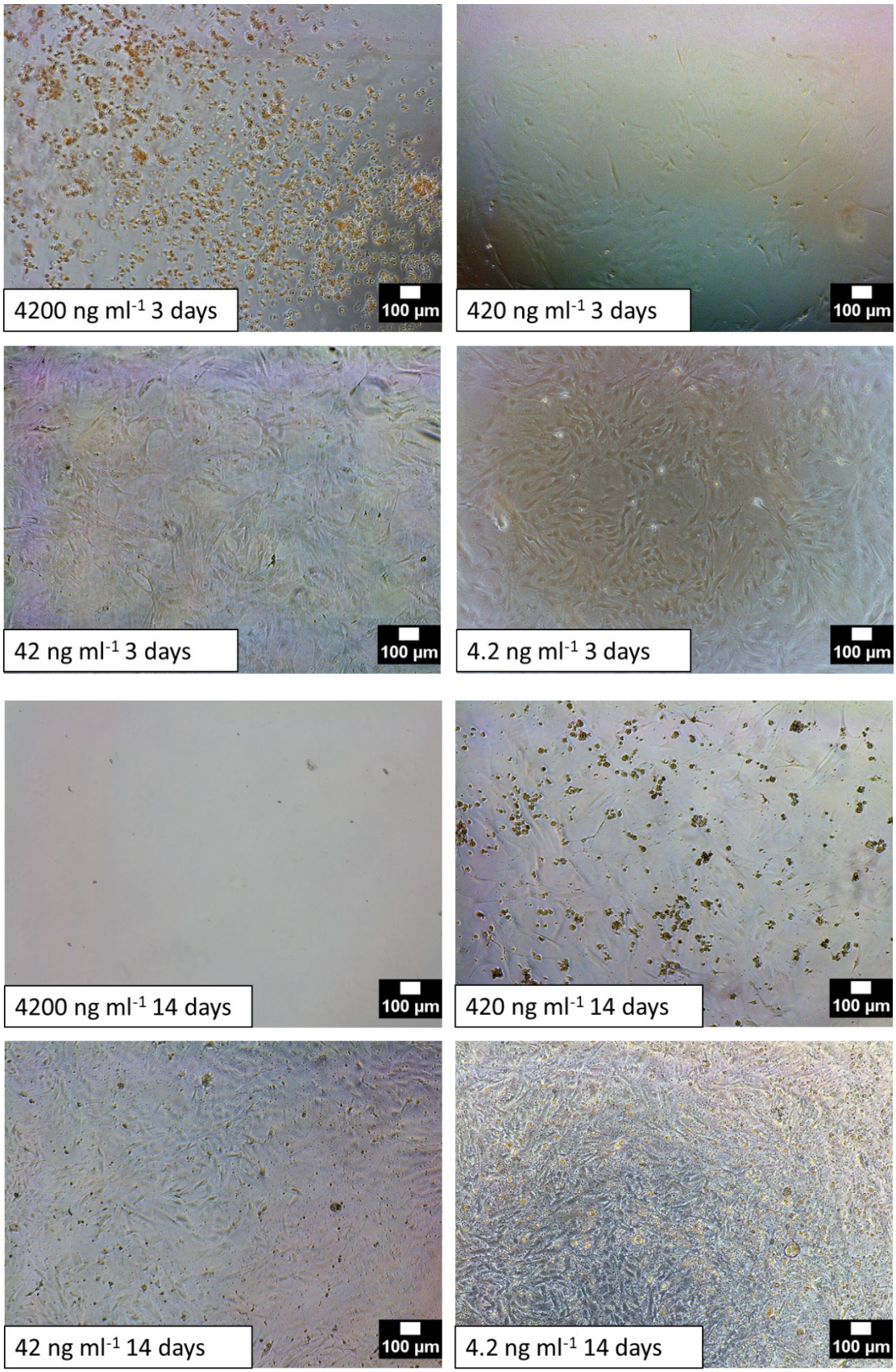


Figure S3. Fitting of the drug percentage released for both membranes according to a) Higuchi model b) Korsmeyer-Peppas model.


4200 ng ml-1 3 days
100 µm
420 ng ml-1 3 days
100 µm
42 ng ml-1 3 days
100 µm
4.2 ng ml-1 3 days
100 µm
4200 ng ml-1 14 days
100 µm
420 ng ml-1 14 days
100 µm
42 ng ml-1 14 days
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4.2 ng ml-1 14 days
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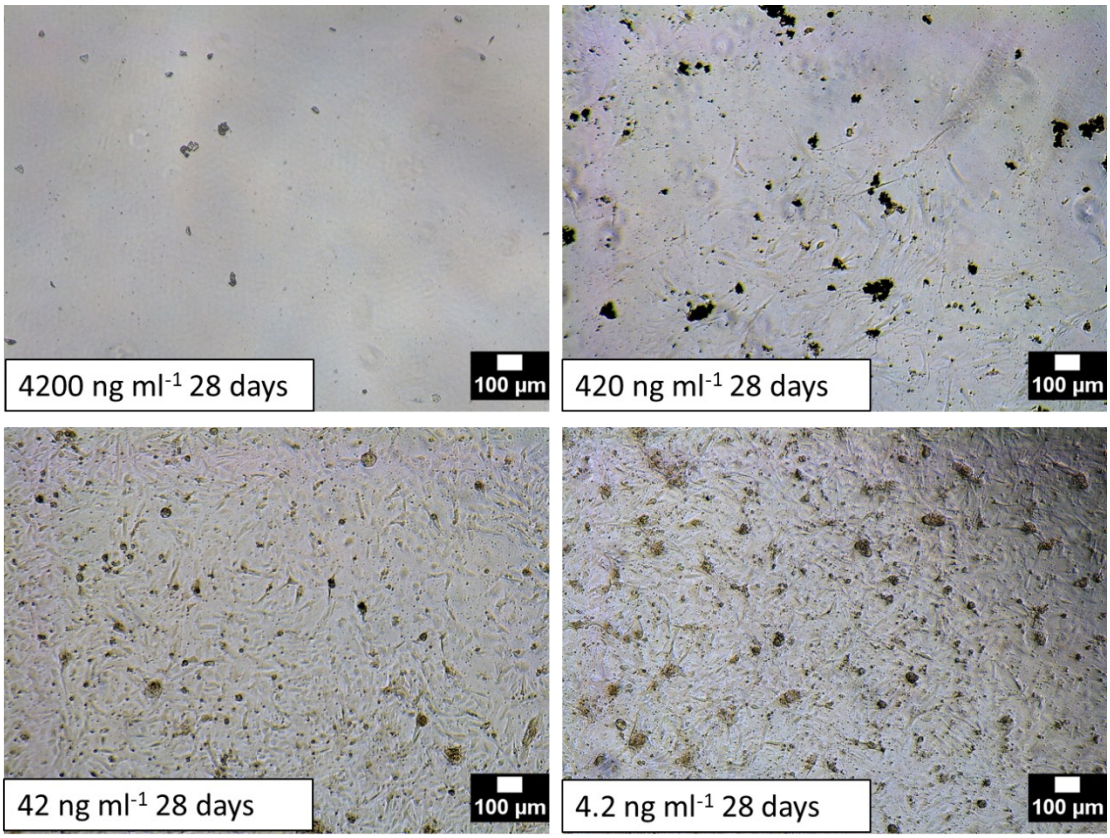

Figure S4. Optical microscope images of rat bone marrow stromal cells (rBMSCs) cultured with a proliferation medium containing different concentrations of simvastatin, after 3, 14 and 28 days of culture.

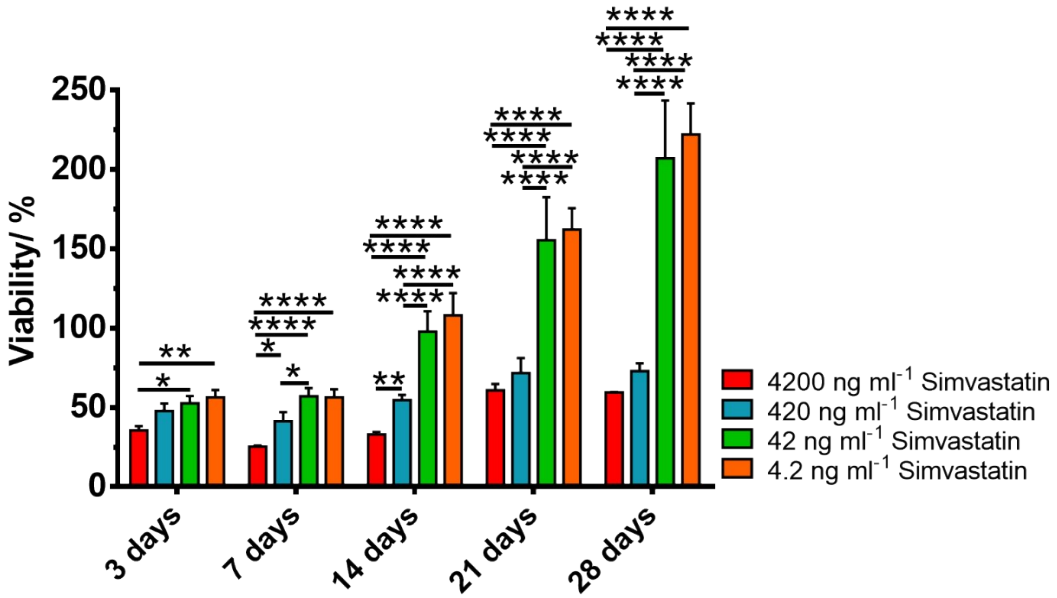

Figure S5. AlamarBlue test for rBMSCs culture with proliferative medium containing different concentrations of simvastatin. *p<0.05, **p<0.01, ****p<0.0001. Viability percentages (%) are relative to the positive control (rBMSCs cultured in an osteogenic medium).

References

1. S.T. Hsu and Y. L. Yao, *J. Appl. Polym. Sci.*, 2013, **130**(6), 4147-4156.
2. J. Yao, S. Zhang, W. Li, Z. Du and Y. Li, *RSC Adv*., 2016, **6**(1), 515-521.