Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

Sustainable production of curable maltodextrin-based electrospun microfibers

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Size distribution analysis

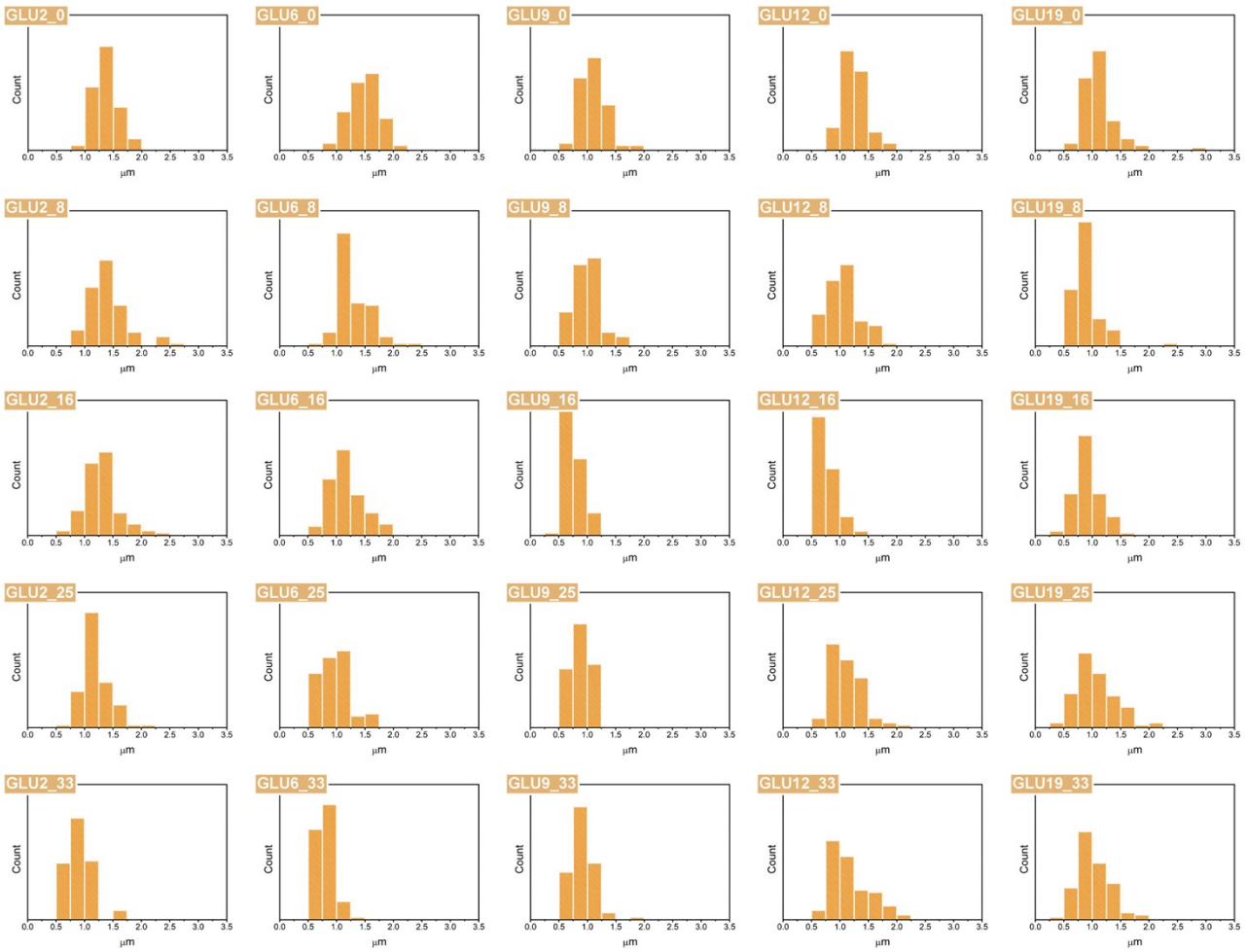

Image S1 Fibre's diameters distribution of samples before thermal treatment.

wt.% citric acid	Mean diameter (µm)				
	GLU2	GLU6	GLU9	GLU12	GLU19
0	1.38±0.21	1.49±0.25	1.10±0.21	1.25±0.20	1.12±0.29
8.3	1.41±0.33	1.27±0.29	0.97±0.22	1.04±0.27	0.90±0.24
16.6	1.29±0.30	1.13±0.29	0.74±0.17	0.77±0.17	0.91±0.22
25.0	1.16±0.25	0.95±0.24	0.85±0.16	1.12±0.27	1.06±0.34
33.3	0.88±0.21	0.78±0.14	0.89±0.19	1.18±0.36	1.01±0.28

Table S1 Fibre's mean diameters before thermal treatment.

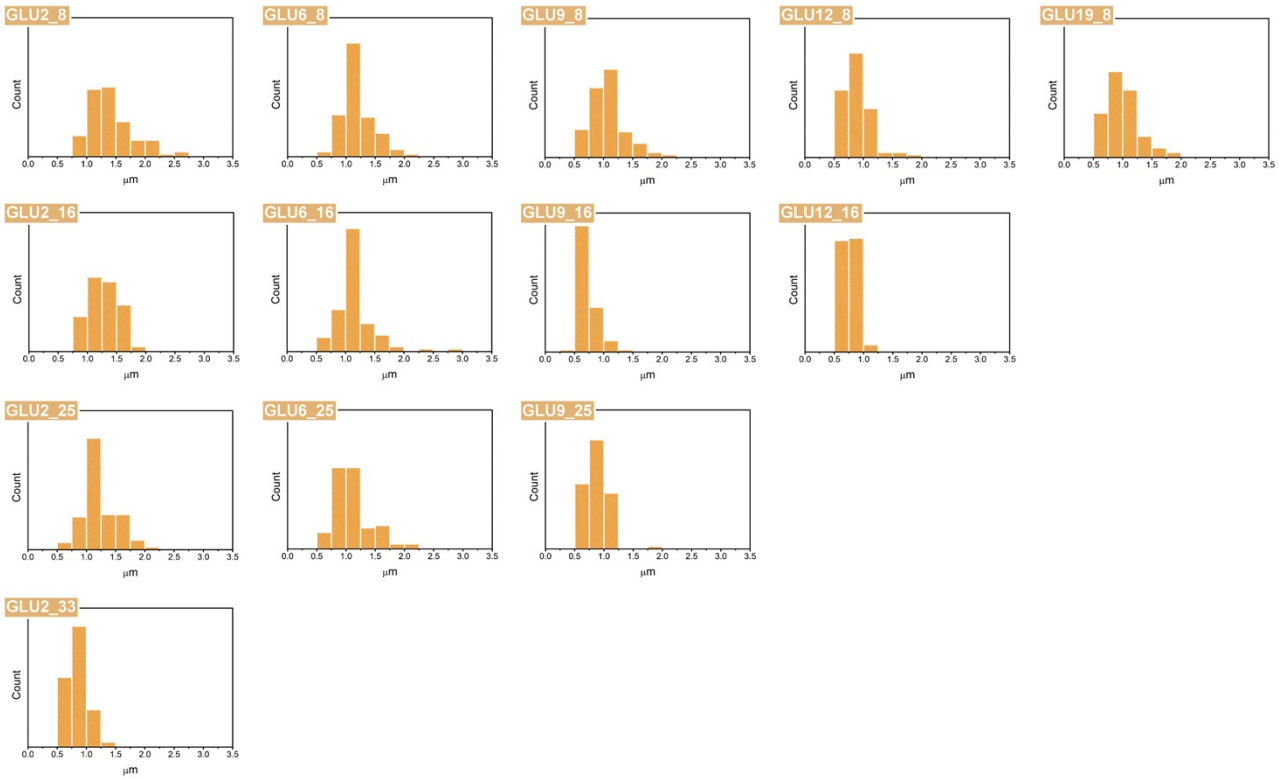

Image S2 Fibre's diameters distribution of samples after thermal treatment.

wt.% citric acid	Mean diameter (µm)				
	GLU2	GLU6	GLU9	GLU12	GLU19
8.3	1.42±0.38	1.16±0.26	1.03±0.28	0.86±0.21	0.99±0.27
16.6	1.28±0.34	1.13±0.33	0.70±0.16	0.75±0.13	\
25.0	1.20±0.28	1.08±0.31	0.84±0.18	\	\
33.3	0.83±0.16	\	\	\	\

Table S2 Fibre's mean diameters after thermal treatment.

Rheological profiles

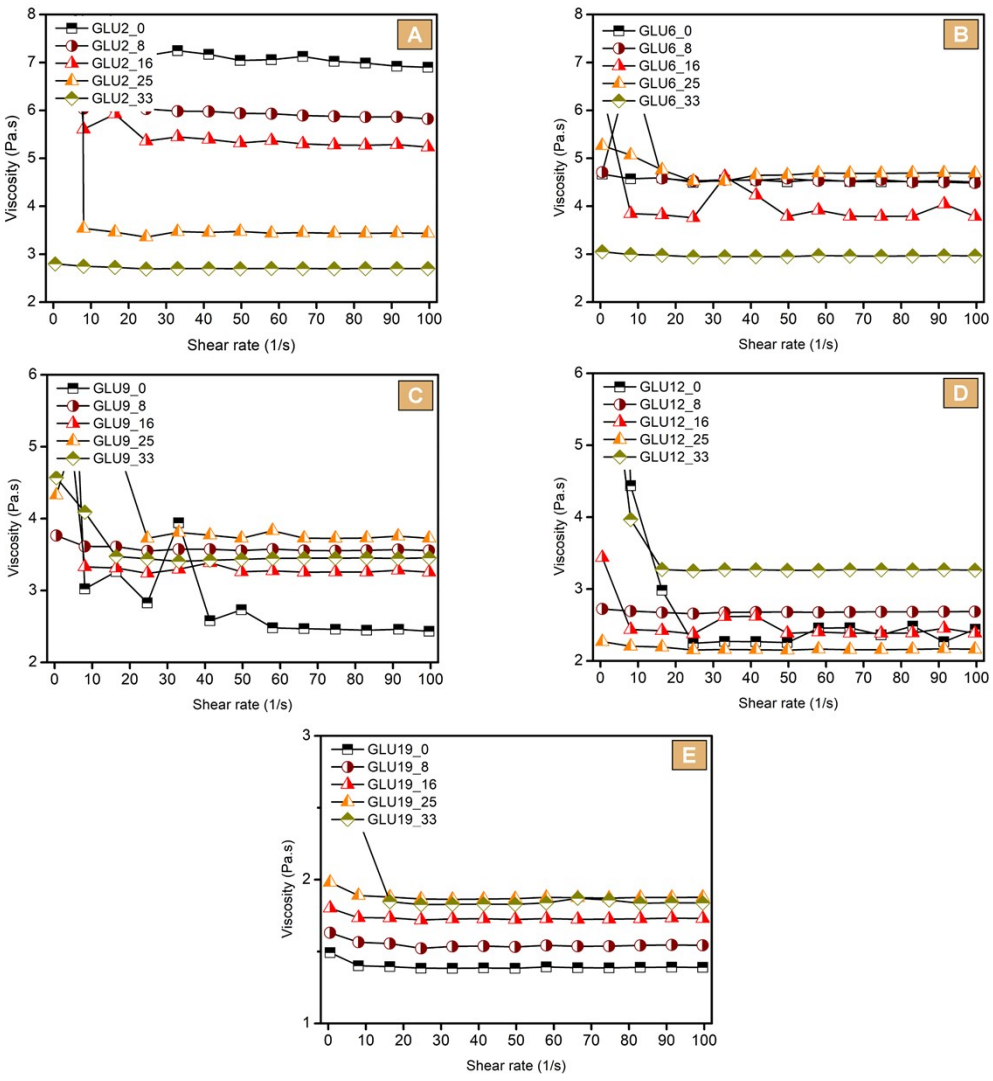

Image S3 Rheological profiles of (A) GLU2 solutions, (B) GLU6 solutions, (C) GLU9 solution, (D) GLU12 solution, and (E) GLU19 solutions.

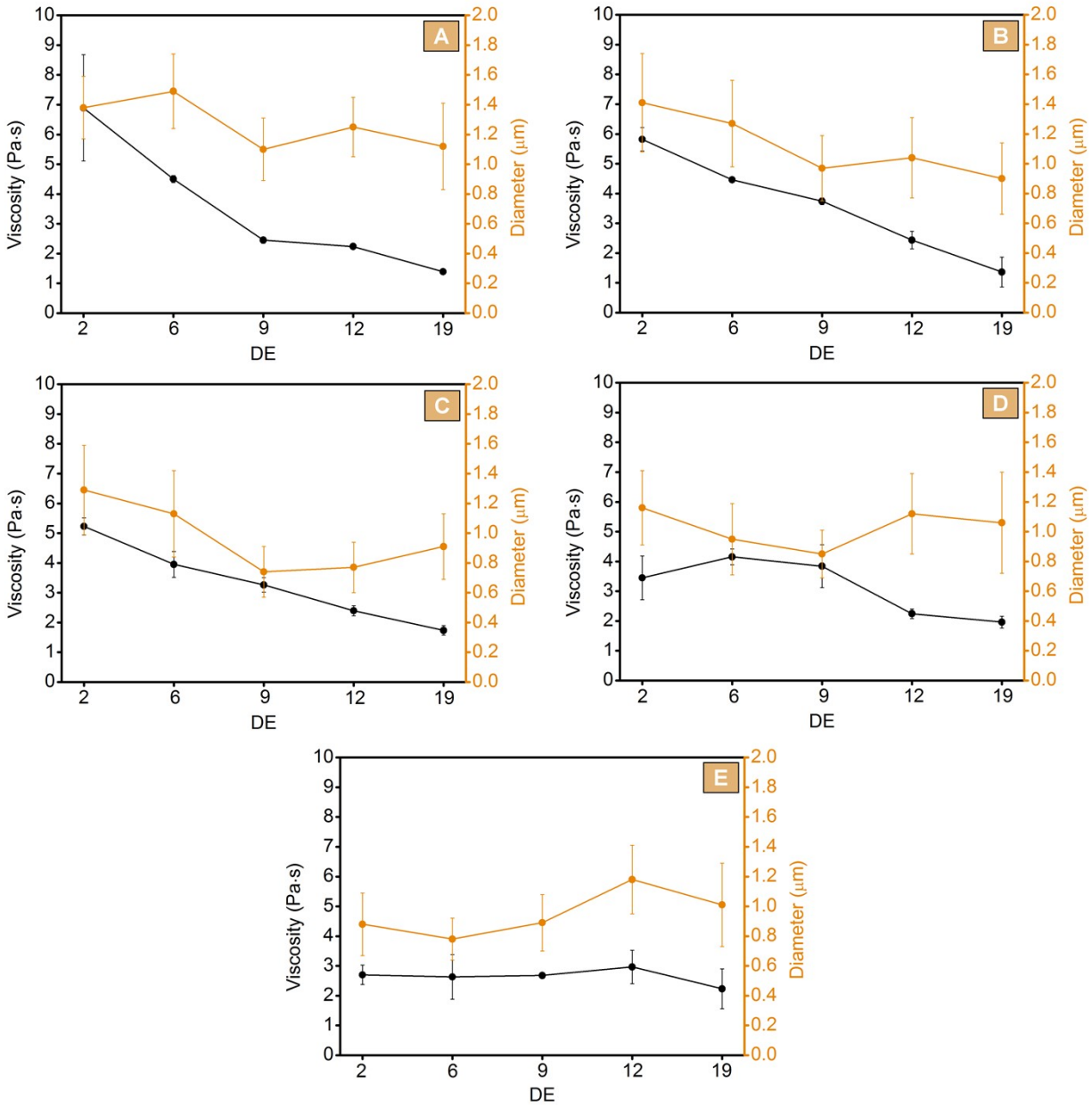

Image S4 Glucidex solutions' viscosity and resulting fibre's mean diameter as a function of the DE characterizing the maltodextrins at (A) 0.0 % CIT, (B) 8.3 % CIT, (C) 16.6 % CIT, (D) 25.0 % CIT, and (E) 33.3 % CIT.

Additional TGA analysis

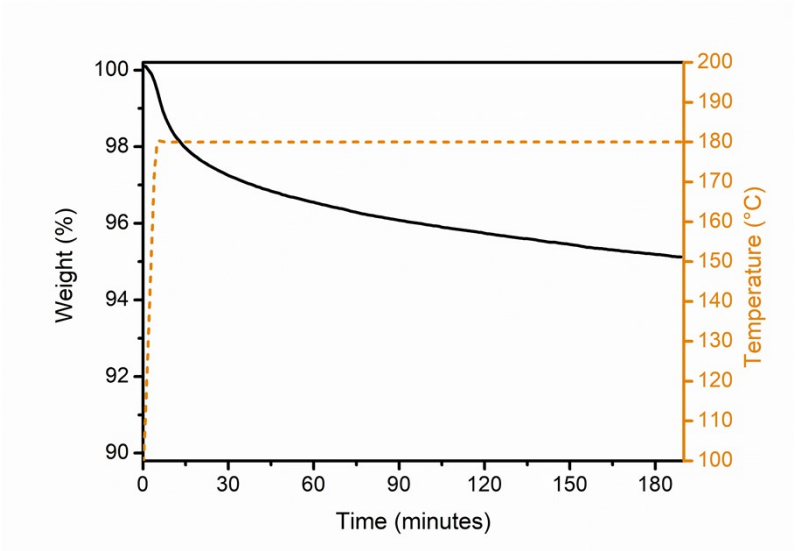

Image S5 180°C isotherm of GLU2_16 spun mat.

The temperature chosen to perform the curing (180 °C) has been selected according to the weight loss phenomena associated to the condensation reactions taking place during cross-linking (Figure 4B). However, that temperature overlays the early stages of the sample degradation (Figure 4B, solid), as supported by Figure S4, since after 3 hours isotherm the weight does not stabilize. For this reason, 30 minutes isotherm was identified as compromise between reaching the sample cross-linking, as demonstrated by (i) the TGA carried out after the thermal treatment in which the absence of the weight loss phenomena related to the condensation reaction was observed (Figure 4B, dashed) (ii) solubility tests (table 2), and avoiding thermal degradation phenomena. Moreover, a solubility test carried out on a GLU2_16 mat after a 3-hour thermal treatment at 180°C, showed a soluble fraction of approximately 13 %, confirming that no advantage in terms of crosslinking is obtained from a longer curing.