

Supporting Information

“Encapsulation and fluidisation maintains the viability and glucose sensitivity of beta-cells”

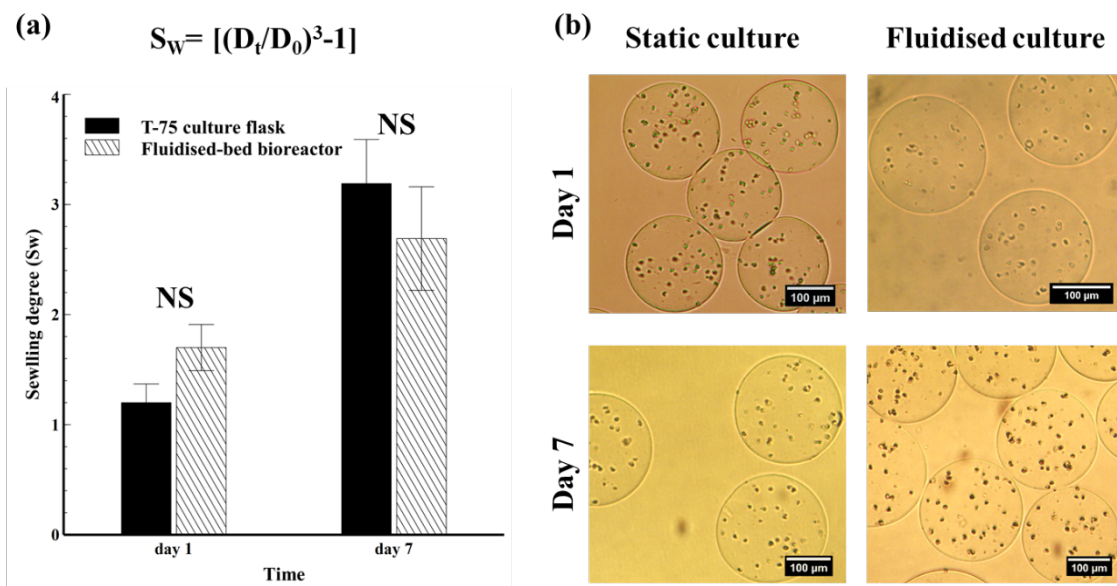
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Affiliations:

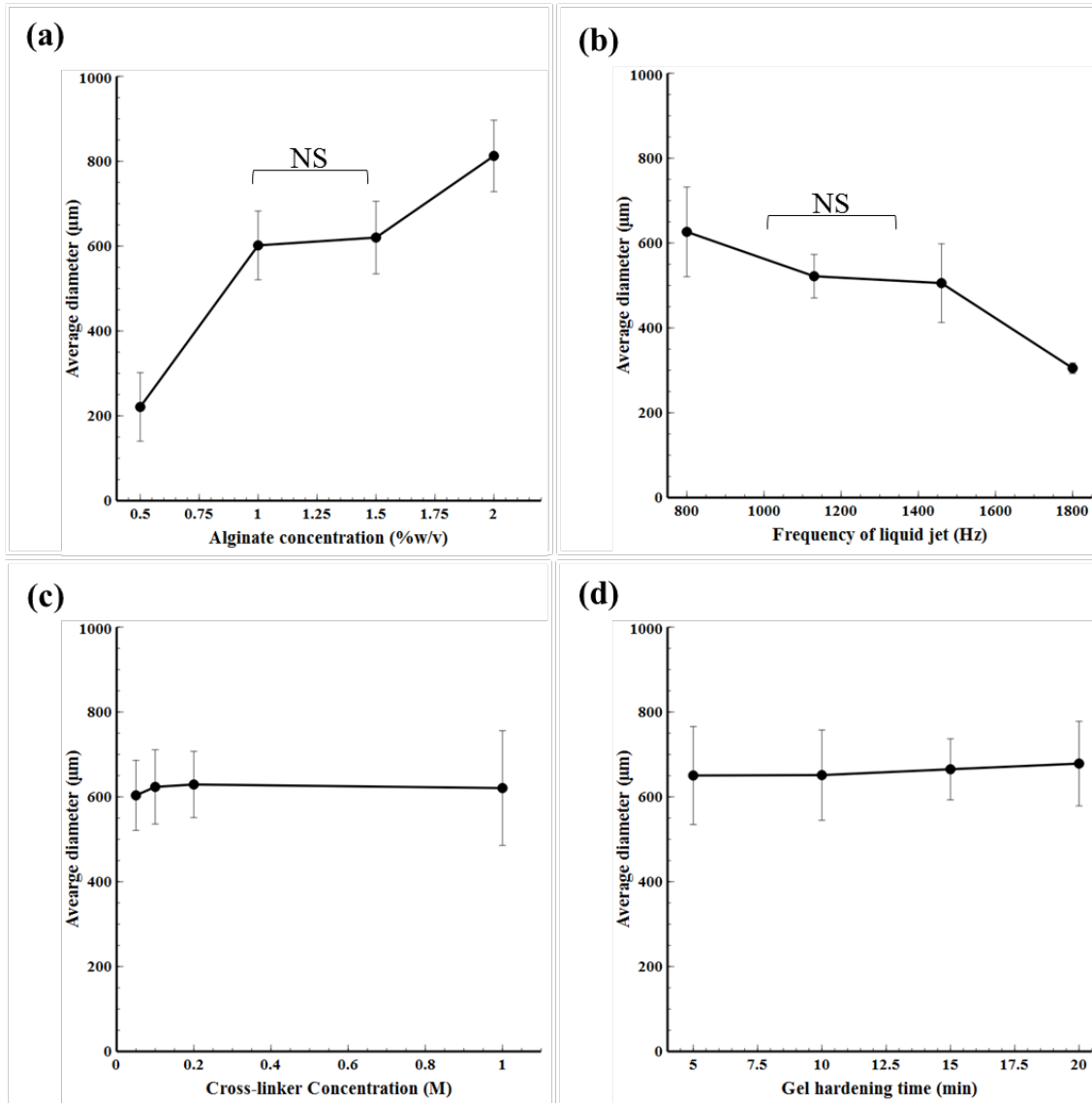
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Supplementary fig 1. (a) Comparison of the swelling degree (D_0 indicates average diameters of alginate microparticles on day 0, and, D_t indicates average diameter on day 1 or 7) of cultured cellular alginate microcapsules under static and fluidised (flow rate= 2000 $\mu\text{L}/\text{min}$) conditions on days 1 (NS, $P=0.053$) and 7 (NS, $P=0.69$), (particles number = 50). **(b)** Optical micrographs of MIN-6 pancreatic cells embedded within alginate microcapsules cultured for 7 days in a fluidised-bed bioreactor and T-75 cell culture flask. Scale bars = 100 μm . NS=non-significant.



Supplemental Figure 2. Effect of individual processing parameters on average diameter and size distribution of alginate microparticles, produced by vibrating nozzle technology (nozzle inner diameter: 120 μm). **(a)** Alginate concentration 0.5-2% w/v ($P < 0.01$) (frequency=1000 Hz, CaCl_2 =0.1 M, hardening time=10 min), **(b)** Frequency of vibrating nozzle 800-1800 Hz ($P < 0.01$) (alginate concentration=1%, CaCl_2 =0.1 M, hardening time=10 min), **(c)** Cross-linked solution concentration 0.05-1 M ($P > 0.05$) (alginate concentration=1%, frequency=1000 Hz, hardening time=10 min), **(d)** Gel hardening time 5-20 min ($P > 0.05$) (alginate concentration=1%, frequency=1000 Hz, CaCl_2 =0.1 M). Results are presented as mean \pm S.D. (number of microparticles = 20). In each experiment, a single processing parameter was varied and all others were constant, NS = non-significant.