

Comparison of pectin microsphere collection methods in microfluidic system

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Hydrogels are important materials for wide applications such as food engineering, tissue engineering and drug delivery systems due to high biocompatibility and versatility in fabrication. However, previous collection methods affected by external pressure generate polydisperse hydrogel microspheres with the tail. In this study, we compare physical properties of pectin hydrogel synthesized by different collection methods such as pipetting, tubing and settling. We demonstrate that the settling method can generate the monodisperse pectin microspheres compared to the tubing and pipetting. Also, settling method can simply control the size of the pectin microspheres ranging from 30 μm to 180 μm , by controlling the viscosity of pectin solution and volumetric flow rate of fluids. Furthermore, we confirmed that pectin hydrogel is available as a carrier by encapsulating the biomaterial in pectin hydrogel. We envision that this results enlarge potential for utilization as a biomaterial.