Release Behaviors of Nifedipine from Poly(ε-caprolactone) Microcapsules Containing Synthetic Additives

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Bioencapsulation has been commonly used as an immobilization technique biotechnological, pharmaceutical and therapeutical, environmental and dairy-product industries. In this work, the producing of a biodegradable Poly(ε-caprolactone) (PCL) microcapsule and the analyzing of from and features for the manufacturing conditions which could be observed in a prospective drug delivery systems (DDS) through drug release. Also, the release behavior of nifedipine on microcapsules was controlled by adding the additives such as poly(vinyl pyrrolidone) (PVP), and poly(ethylene glycol) (PEG). The chemical structure of each sample was measured using FT-IR and 1H-NMR, and the surface free energy was characterized by measuring contact angles. The decomposition rate of the biodegradable polymer blends was measured from either acidity degree by pH meter or weight loss of water. The drug release test of biodegradable polymer containing Nifedipine was characterized by UV spectra. This showed that, the acidity, weight loss, and drug release of biodegradable polymers were increased as the synthetic additive ratio was increased.