

The formation of protein-loaded microparticles by supercritical fluid processing method

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In this study, we use supercritical CO₂ as a processing medium for the fabrication of poly (lactide-co-glycolide) (PLGA) microparticles that encapsulate a protein material. Lysozyme is used as the model protein. We demonstrated that this polymer and a dry powder of a protein can be mixed under supercritical carbon dioxide conditions and that the protein component retains its biological activity. In this experiment, we progress the work to demonstrate that the plasticized polymer and dry powder protein mixture can be sprayed to form solid polymer that encapsulate the protein. The methodology is based on the technique of the particle generation from supercritical suspension (PGSS). Particle size range is between 30 and 300 μm after spraying. Particles were irregularly shaped with some pores. Lysozyme was encapsulated in the polymer without significant loss of enzymatic activity.