

Effect of polymer chemistry and fabrication method on protein release and stability from polyanhydride microspheres. ^[1]

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Abstract The release kinetics and stability of ovalbumin encapsulated into polyanhydride microspheres with varying chemistries were studied. Polymers based on the anhydride monomers sebacic acid (SA), 1,6-bis(p-carboxyphenoxy)hexane (CPH), and 1,8-bis (p-carboxyphenoxy)-3,6-dioxaoctane (CPTEG) were utilized. Microspheres were fabricated using two non-aqueous methods: a solid/oil/oil double emulsion technique and cryogenic atomization. The studies showed that the two fabrication methods did not significantly affect the release kinetics of ovalbumin, even though the burst release of the protein was a function of the fabrication method and the polymer chemistry. Antigenic stability of ovalbumin released from microspheres prepared by cryogenic atomization was studied by western blot analysis. These studies indicate that the amphiphilic CPTEG:CPH polyanhydrides preserved protein structure and enhanced protein stability by preserving the immunological epitopes of released protein.

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