

## **256e Expediting Wound Healing Using Uterocalin-Loaded Polyanhydride Microspheres**

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Uterocalin (Utc/Icn2) is a 24 KDa acute phase protein whose role in expediting wound healing and inhibition of bacterial growth are currently being investigated. In both cases the continuous supply of uterocalin to the body is desired over a single administration. The objective of this work was to encapsulate, stabilize, and provide a sustained release of therapeutically active uterocalin from polyanhydride microspheres.

Polyanhydrides are surface eroding biocompatible polymers that have successfully been used to both stabilize and to provide a sustained release of proteins. The homopolymers and copolymers of the polyanhydride system based on poly(sebacic anhydride) (poly(SA)) and poly(1,6-bis-*p*-carboxyphenoxyhexane) (polyCPH) were used to fabricate uterocalin-loaded microspheres. The microspheres were fabricated using a non-aqueous cryogenic atomization technique, which maximized protein loading, and characterized using scanning electron microscopy, gel permeation chromatography, a coulter counter, and Fourier transform infrared spectroscopy. The *in vitro* release kinetics of the uterocalin-loaded microspheres was determined. The released protein was characterized using SDS-PAGE and western blotting. The activity of the released protein was quantified using a wound healing cell-based assay. The effects of the polymer chemistry and protein/polymer interactions on the stabilization and release of uterocalin were studied and these effects provide insights on the ability of native uterocalin to expedite wound healing as well as on the design of sustained delivery systems.