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Characterization of a polymer based drug delivery system for the enhancement of wound healing RYAN WIDEJKO, Francis Marion University, KEITH MOORE, JAY POTTS, University of South Carolina School of Medicine — The field of Regenerative Medicine has seen an increase in the need to improve long term implant compatibility. To address this need we have combined microencapsulation and beneficial wound healing agents. The aim of the project was to develop and characterize a delivery system for the agent αCT1. To enable the extended release of this peptide, alginate microcapsules coated in poly-l-ornithine (PLO) were explored as a means of delivery. These capsules were created via electro-spraying and characterized by phase contrast microscopy, scanning electron microscopy (SEM), atomic force microscopy (AFM), and release profiles. SEM analysis showed the addition of PLO did not change the overall geometry or topology of the microcapsules. AFM analysis showed that PLO affected the rigidness of the capsules by decreasing it from 54.26 pN to 46.11 pN. The release profile analysis revealed that over an 8 hr period the addition of PLO extended the αCT-1 released by 146% over the release of alginate alone. Phase contrast microscopy revealed that the addition of PLO changed the average size of the capsules from 209 μm to 187 μm. The results of this project indicate that the use of alginate microcapsules as a drug delivery system for αCT-1 is a viable method. This material is based upon the work performed in association with an REU Program hosted by the Biomedical Engineering Program at USC and supported by the NSF under the grant #EEC-1005138.

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