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Advancing the Arizona State University Knowledge Enterprise

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Case ID:M20-010L^
Published: 7/20/2020

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Bioactive Dressing for Accelerated Wound Healing

Wound healing is a complex but organized process involving hemostasis, inflammation, new tissue generation and remodeling. However, when wounds cover a large surface area, become infected, or occur in diabetic or elderly patients, wound healing can be delayed and lead to chronic ulcerations and other complications. Despite the abundance of wound management techniques, dressings and treatments, failure rates are still high, particularly for chronic and difficult to heal wounds. While growth factors have become the center of therapeutic developments, new research is showing that inflammatory modulators may have a better impact on wound healing.

Researchers at Arizona State University have developed a novel bioactive wound dressing that accelerates wound closure and healing. This bioactive wound dressing combines small molecule modulators as well as growth factors to result in enhanced wound healing when delivered simultaneously or as a sequential treatment after application of the wound dressing. When tested in a BALB/c mouse wound healing model, a significant reduction in wound area, as well as improved healing and biomechanical properties was observed in this dressing as compared to an FDA-approved dressing.

The demonstrated efficacy of this novel dressing makes it a promising treatment option for wound healing and potential game changer for chronic or difficult to heal wounds.

Potential Applications

- Wound dressings o Large acute wounds o Chronic/slow healing wounds o Diabetic or elderly-related wounds

Benefits and Advantages

- Combing growth factor nanoparticles and other inflammatory modulators accelerates and enhances healing
- Significant skin strength recovery
- Increases epidermal thickness
- Robust early onset and resolution of inflammation to help in proliferation and

remodeling
- Promotes reepithelialization, neovascularization and myofibroblast mediated wound contraction
- Can utilize biostable or biodegradable materials

For more information about this opportunity, please see

Ghosh et al - Wound Healing Society Annual Meeting - 2020

Ghosh et al - Wound Healing Society Annual Meeting - 2019

For more information about the inventor(s) and their research, please see

Dr. Rege's departmental webpage

Dr. Rege's laboratory webpage