

Study discovers new therapeutic target for diabetic wound healing

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Research led by scientists in Dr. Song Hong's group at LSU Health New Orleans has identified a novel family of chemical mediators that rescue the reparative functions of macrophages (a main type of mature white blood cells) impaired by diabetes, restoring their ability to resolve inflammation and heal wounds. The research is in-press and is scheduled to be published in the October 23, 2014 issue of *Chemistry & Biology*, a Cell Press journal.

The [white blood cells](#), or [leukocytes](#), of the immune system, help defend the body against infection or foreign invaders. Evidence is mounting that they and another type of blood cell, called platelets (whose main job is to stop bleeding), also play important roles in healing. How leukocytes and platelets contribute to injury repair is still largely unknown, and understanding the mechanisms could offer new leads to repair injury, especially to cure delayed- or non-healing wounds of patients with diabetes. Diabetes disrupts the ability of macrophages to function in the repair and regeneration of cells and organs after the injury.

The LSU Health New Orleans researchers discovered that leukocytes and platelets produce a group of molecules, called Maresin-Ls, which promote [wound healing](#) and reduce inflammation. They also identified the enzymes needed in the cells to produce these molecules. They demonstrated that treatment by these novel molecules restores reparative functions to diabetic macrophages, enabling the cellular processes known to be critical to wound healing and suppressing those causing chronic inflammation associated with non-healing diabetic wounds.

"The delayed- or non-healing of wounds leads to pain, disability and poor quality of life for the patients," notes Dr. Song Hong, an Associate Professor at LSU Health New Orleans' Neuroscience Center and Department of Ophthalmology. "These findings may provide a fundamental insight into the roles of leukocytes and platelets in wound healing and offer a therapeutic option of using maresin-L-rescued diabetic [macrophages](#) for better treatment of diabetic wounds or other impaired repair of injury."

According to the American Diabetes Association, nearly 26 million people in the United States have diabetes and 35% of US adults aged 20 or older have prediabetes. The annual economic cost of diagnosed diabetes in the US is \$245 billion. In Louisiana, according to the Kaiser Foundation, 356,000 adults have been diagnosed with diabetes.

The delayed- or non-healing of wounds is one of the major diabetes complications that cause suffering in people with [diabetes](#) and results in more than 500,000 new diabetic foot ulcers and 50,000 lower extremity amputations per year in the US alone. The annual excessive cost of treating one foot ulcer is about \$14,000.

Provided by Louisiana State University

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