

Diabetes mellitus and molecular and cellular process of tissue repair

Lima MHM

University of Campinas, Brazil



Abstract

DM is a continuous metabolic condition that leads to chronic complications in different organs and systems, such as cardiovascular problems, retinopathy, nephropathy and peripheral neuropathy and the main cause of complications is poor glycemic control. People with diabetes are prone to the development of skin ulcers with delayed wound healing and various factors can interfere with wound healing, increasing the probability of infections as well as for the need for amputation. Studies have shown that, compared to wounds in animals with diabetes not treated with insulin, those treated with insulin have faster closure with a diminished inflammatory phase, improved formation of granulation tissue and collagen fibers organized in meshes in a characteristic pantographic pattern similar to healthy skin. The mechanism by which insulin enhances the rate of wound healing in animals with diabetes, however, is not completely understood. Results from our group have demonstrated that, in diabetic animals with wounds, topical insulin cream reduces the duration of the wound's inflammatory phase, improves wound reepithelialization, tissue granulation and wound contraction and increases collagen deposition. However, healing effects of insulin in diabetic wounds appear to be dependent on the activation of the IR/PI3K/Akt/MAPK/ERK insulin signaling, suggesting that these pathways may have an important role in wound healing. We also found that these pathways were attenuated in the wounded skin of diabetic rats when compared to the wounded skin of normal rats, in parallel with an increase in the time for wound closure. Therefore, an insulin cream administered on the wound skin of diabetic animals, improved wound healing and reversed the reductions observed in proteins of the insulin signaling pathways. In addition, the treatment also increased the expression of other proteins, such as, VEGF and SDF- 1 α in wounded skin.

Biography

Lima MHM has completed her PhD at the age of 32 at the University of Campinas, Brazil. She is the Associate Professor at the School of Nursing from University of Campinas, Brazil. She has over 50 publications that have been cited over 300 times and her publication H-index is 09. She has also been serving as an editorial board member of reputed Journals.

Publications

- Assessment of the use of Unna boot in the treatment of chronic venous leg ulcers in adults: systematic review protocol
- Effect of Topical Insulin on Second-Degree Burns in Diabetic Rats
- Maintenance of central venous access devices permeability in cancer patients / Maintaining the permeability of central venous access devices in cancer patients / Maintaining the permeability of central venous access devices in cancer patients
- Effect of Educational Strategies on the Sleep Quality of People with Diabetes: Randomized Clinical Trial
- Mental health interventions for health professionals in the face of the Coronavirus pandemic [Mental health interventions for health professionals in the context of the Coronavirus pandemi



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