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ADP TREATMENT IMPROVES WOUND HEALING IN DIABETIC MICE

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Statement of the problem: Chronic wound is a public health problem worldwide, which affects 6.5 million patients in USA. Such problem, in association with high global prevalence of diabetes, reflects the increase in diabetic ulcers. Considering the absence of an effective treatment for chronic wound, the purpose of this study is to investigate the possible beneficial effects of a purinergic agonist in tissue repair of chronic wounds in diabetic mice.

Methodology: Diabetics was induced by Aloxan (75 mg/Kg I.V). Seven days later mice were anesthetized and a full-thickness wound was induced surgically using a punch biopsy (1 cm of diameter). ADP (30 μ M) was topically applied once a day for 5 days consecutively on the wound.

Findings: We observed that ADP accelerated the wound contraction, improved tissue repair, increased collagen deposition and recruited neutrophils and eosinophils to the wound. Also, ADP increased the number of mast cells and myofibroblasts in the wound. Besides, ADP positively modulated its own receptors, VEGF and TGF- α in the wound. These effects were only observed in diabetic mice. More interestingly, others nucleotides did not accelerate the wound healing as ADP. Clopidogrel treatment, a P2Y₁₂ receptor antagonist, prevented all parameters evaluated, confirming the role of the P2Y₁₂ in ADP effects. Still, ADP seemed to increase the number of arginase⁺ cells and to reduce iNOS⁺ cells, which implies in the increase of M2 macrophages in the wound. In in vitro experiments, ADP increased fibroblasts proliferation and migration, which corroborate with the in vivo studies. Finally, ADP also accelerated the S. aureus-infected wound healing.

Conclusion & Significance: ADP seems to modulate cell activation and recruitment providing an adequate scenario for wound healing in diabetic mice, being. It seems to be a promising treatment for chronic wounds.

Biography

Claudia Farias Benjamim has completed her MD in the Unit Basel University Hospital and she has worked as General Practitioner in occupational Disorders Ali Abaad Industrial Area, Garmsaar, three postdoctoral studies: 1999-2001 in the Pharmacology Department, Sao Paulo University; 2001-2004 in the Pathology Department, University of Michigan, MI, USA; and 2012-2013 in Myology Institute, University Pierre et Marie Curie, Paris, France. She is an associate professor/ researcher in Federal University of Rio de Janeiro, RJ, Brazil. She has published 45 papers in reputed journals and has been serving as an editorial board member of repute. Benjamim aims to understand cellular response in chronic inflammatory disease as sepsis, pulmonary fibrosis and skin wound healing. Her group studies the pathophysiology of these diseases and searches for successful therapies. Her group expertise is cell and molecular biology.

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