



Comparison of two non-caloric sweeteners in experimental study: Diabetic wound healing perspective

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Stevia, known for its rich phenolic content, has potential benefits in wound healing. This study aimed to evaluate the effects of two different non-caloric sweeteners (NCS), Stevia and Saccharin, on diabetic wound healing and determine the optimal dosage. A total of 36 Wistar albino rats were induced with diabetes using streptozotocin (STZ) and randomly divided into six groups: (A) diabetes control, (B) diabetes with wound control, (C) diabetes + wound + 250 mg/kg Stevia, (D) diabetes + wound + 500 mg/kg Stevia, (E) diabetes + wound + 250 mg/kg Saccharin, and (F) diabetes + wound + 500 mg/kg Saccharin. Dorsal wounds were created using a punch biopsy, and NCSs were administered via oral gavage for seven days. Biochemical analyses were performed to assess oxidative stress markers, inflammation, protein carbonyl (PC) levels, matrix metalloproteinases (MMPs), and lipid profiles in serum and wound tissues. Histological evaluations were conducted using hematoxylin-eosin and Masson's trichrome staining. Both NCSs contributed to wound healing; however, 250 mg/kg Stevia showed better results. This group exhibited increased wound closure rates and collagen accumulation while oxidative stress, inflammation, PC, and MMP levels were significantly reduced in wound tissue. Stevia at 250 mg/kg effectively enhances diabetic wound healing by reducing oxidative stress and inflammation while promoting extracellular matrix remodeling. It was more efficient than 500 mg/kg Stevia and Saccharin at both doses, likely due to its rich phenolic composition. Stevia may serve as a potential adjunct in diabetic wound management.

Keywords: *Stevia rebaudiana*, Saccharin, Inflammation, Diabetic wound, Oxidative stress