

Effects of oral administration of ω -3 eicosapentaenoic fatty acid (EPA) on wound healing in mice

Beatriz Burger (IC), Carolina M. C. Kühl (PG), Mariah B. P. dos Anjos (IC), Thamiris Candreva (IC), Hosana G. Rodrigues (PQ)

Abstract

The aim of this study was to determine the effects of intake of oil rich in eicosapentaenoic fatty acid (EPA) on the wound healing process in non-diabetic and diabetic mice by macroscopic analysis of wound closure and quantification of tissue cytokines.

Key words: cytokines, wound healing, fatty acids

Introduction

Diabetes present changes in the inflammatory response¹, making the diabetic patients susceptible to impairment of tissue repair². ω -3 fatty acids EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid), have been studied in diseases characterized by excessive inflammation³, and the results indicate that these fatty acids modulate the immune system through the production of lipid and protein mediators involved in inflammation⁴

Results and Discussion

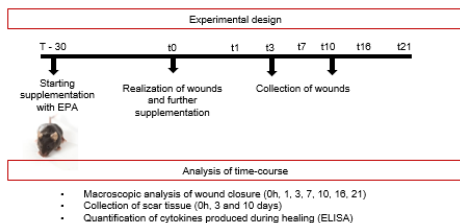


Figure 1. Methodology

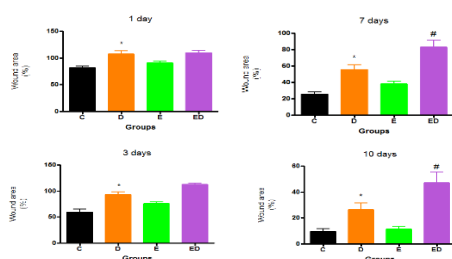


Figure 2. Wound area (%) at 1, 3, 7 and 10 days after wound induction in (C) control animals; (D) diabetic animals; (E) animals that received orally 50 μ L of EPA; (ED) diabetic animals that received orally 50 μ L of EPA. Values are expressed as mean \pm standard error of the mean. (*) Significant difference from C; (#) Significant difference from D. Differences were considered significant when $p < 0.05$.

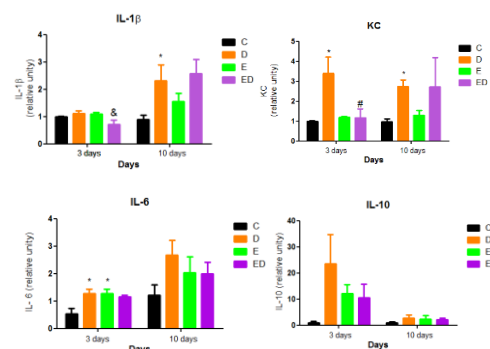


Figure 3. Quantification of cytokines in 3 and 10 days of wounds of mice (C) control; (D) diabetic; (E) animals that received orally 50 μ L of EPA; (ED) diabetic animals that received orally 50 μ L of EPA. Values are expressed as mean \pm standard error of the mean. (*) Significant difference from C; (#) Significant difference from D; (&) Significant difference from E. Differences were considered significant when $p < 0.05$.

Conclusions

As preliminary conclusions, we observed that diabetic animals supplemented with 50 μ L of EPA had delayed wound healing which may be related to an anti-inflammatory effect at the beginning of tissue repair.

Acknowledgement



- ¹Komesu, MC et al. *Pathophysiology*, v. 11, n. 2, p. 63-7 (2004).
- ²Kavitha, K. V.; et al. *World J Diabetes*, v. 5, n. 4, p. 546-56, 2014.
- ³Prostek, A.; et al. *Lipids in Health and Disease*, v. 13, n. 3, 2014.
- ⁴Chow, O., Barbul, A. *Adv Wound Care (New Rochelle)*, v. 3, n. 1, p. 46-53, 2014.