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

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

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 μL of EPA; (ED) diabetic animals that received orally 50 μL of EPA. Values are expressed as mean ± 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 μL of EPA; (ED) diabetic animals that received orally 50 μL of EPA. Values are expressed as mean ± 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 μL of EPA had delayed wound healing which may be related to an anti-inflammatory effect at the beginning of tissue repair.

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