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\(^1\), making the diabetic patients susceptible to impairment of tissue repair\(^2\). ω-3 fatty acids EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid), have been studied in diseases characterized by excessive inflammation\(^3\), and the results indicate that these fatty acids modulate the immune system through the production of lipid and protein mediators involved in inflammation\(^4\).

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.

Acknowledgement