

## Olive Oil Consumption Accelerates Wound Healing in Patients with Burns

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Effect of oral olive oil on healing of 10-20% total body surface area burn wounds in hospitalized patients.

Nutritional support is important in the treatment of thermally injured patients. Glucose, lipids, and fat composition are all important for wound healing and improving the immune response of severely burned patients. Some animal studies have shown positive effects of oleic acid on wound healing.<sup>1,2</sup> Noting that there have been no studies showing the effects of oral olive (*Olea europaea*, Oleaceae) oil on burn wound healing, the authors report on their randomized, controlled study of hospitalized patients with burns covering 10-20% of total body surface area to evaluate these effects.

Conducted from September 2012 to December 2013, the study enrolled 104 patients (mean age,  $33.34 \pm 7$  years) with deep second-degree burn wounds. Of those 104 patients, 100 completed the study (50 in the study group and 50 in the control group). Two patients in the study group discontinued the study because of intolerance to olive oil odor and 2 in the control group because of early discharge from the hospital. Baseline characteristics were similar for all patients.

All patients received similar wound care treatment (wound excision, skin grafting, and antibiotic therapy) and pain management with intravenous morphine. Within 24 hours of hospital admission, the patients were started on oral nutrition, with macronutrient composition set at 20% protein, 60% carbohydrates, and 20% lipids. For the study group, olive oil was used as the oil in the diet; for those in the control group, sunflower (*Helianthus annuus*, Asteraceae) oil was used. Additional olive oil or sunflower oil was added to salads to ensure a 20% total fat content.

All patients continued on the diet until they were discharged from the hospital with complete healing of burn wounds and donor sites. While hospitalized, they were examined for wound infection, sepsis, and healing of grafted and nongrafted wounds. Complete graft healing was defined as graft-take of more than 90% of the graft size.

No significant differences in serum albumin levels or total calorie intake were observed during the study between the 2 groups. The percentage of grafting candidates was not significantly different between the groups; 52.8% were in the control group and 50% were in the olive oil group. No evidence of graft rejection, wound infection, or sepsis

was observed in any of the patients. Two patients in the control group were admitted to the intensive care unit (ICU) during therapy; however, no significant difference in ICU admission was evident between the groups.

The mean duration of wound healing was  $7.2 \pm 0.5$  days in the olive oil group compared with  $8.7 \pm 0.5$  days in the control group ( $P=0.04$ ). The mean number of days spent in the hospital was  $7.4 \pm 0.5$  in the olive oil group compared with  $8.9 \pm 0.4$  in the control group ( $P=0.05$ ).

Citing earlier studies, the authors suggest that the antioxidant and anti-inflammatory components of olive oil, such as hydrocarbons, polyphenols, tocopherols, sterols, and triterpenoids,<sup>3,4</sup> may be responsible for minimizing injury in patients with burns. In an earlier animal study, the effects of olive oil on immune function were attributed to oleic acid rather than trace elements or antioxidants.<sup>3</sup> Other studies in rats have shown accelerated wound healing with either oral or topical olive oil use by modulation of inflammation.

The authors conclude that "an oral diet provided with olive oil in patients with burn may accelerate wound healing and decrease the duration of hospitalization." Studies of larger numbers of patients with burns of more than 20% total body surface area who consume greater doses of olive oil may yield more significant effects, say the authors.