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**Utilizzo dell'olio extravergine d'oliva (EVOO) nel trattamento di un'ulcera traumatica nel cavo orale. Un case report**

**Use of Extra Virgin Olive Oil (EVOO) in the treatment of traumatic ulcers. A case report**

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## Use of Extra Virgin Olive Oil (EVOO) in the treatment of traumatic ulcers. A case report

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## Introduction

Extra virgin olive oil (EVOO) is an essential food of the Mediterranean diet (MD) and some countries in the Mediterranean area such as Italy, Spain and Greece represent the largest and most important producers in the world. In Southern Italy, precisely all through the countryside of the north of Bari in Apulia, is produced a particular type of extra virgin olive oil by cultivar "Coratina" characterized by the presence of a high content of polyphenols, the highest compared to other cultivars (1) and very rich in biocompounds.

Since the last century, it was customary for the inhabitants of the area to use it for the treatment of various diseases: burns, trauma, cheilitis and processes inflammation of various kinds. Over time, this practice has gradually disappeared and almost forgotten.

In recent decades, numerous studies have been published which have documented most of the beneficial effects of the Mediterranean diet in promoting human health.

Its beneficial effects can largely be attributed to the consumption of extra virgin olive oil (EVOO) (2). The consumption of extra virgin olive oil is able to reduce lipid and DNA oxidation, improve the lipid profile and insulin resistance, endothelial dysfunction, inflammation, reduce blood pressure in hypertensive patients and modify the response of the immune system (3, 4).

Despite its extensive use and although numerous studies on extra virgin olive oil have shown its remarkable effectiveness in healing skin burns (5, 6, 7), bedsores (8) and foot wounds in the diabetic patient (9), no scientific studies have been proposed for the treatment of traumatic ulcers in the oral cavity.

In this case - report, we decided to use EVOO as a therapeutic aid in the treatment of mucosal oral injury in a prosthesis on implant-bearer patient.

**Key words:** extra virgin olive oil, polyphenols, "Coratina" cultivar, traumatic ulcers.

## CASE REPORT

A 60-year-old female patient carrying a lower prosthesis on implants comes to our attention with a deep and very painful ulcer in the posterior area at the level of the molars; an ulcer of about 2cm and about 1cm deep and has been present for about 6 days (Fig. 1).

We have compiled patient's medical history, which resulted negative.

After a thorough visit, in which were searched precontacts of the prosthesis using silicon material to detect high pressure and/or rubbing areas, the result was negative.



*Figura 1: initial state: six days ulcer.*



*Figura 2: Four days after application*



Figura 3: Eight days after

After making a diagnosis of traumatic ulcer, probably not due to wrong prosthesis but more likely due to hard or crunchy food that caused the mucosal ulcer during chewing, we prescribed her therapy with EVOO cultivar "Coratina". The patient held in her mouth about 15 ml (a table-spoon) of oil for about 2 minutes so as to affect the entire surface of which presented the lesion twice a day, avoiding eating and drinking immediately after application for at least 1 hour.

The patient continued to wear prosthesis because, despite having pain, the aesthetic problem was primary compared to the pain itself.

After only four days from the beginning of the treatment, patient's wound was mostly healed (Fig.2). For greater safety and for the full *restitutio ad integrum* of the mucosa, we continued to prescribe the use of oil extra virgin olive oil for another 4 days with the same mode of use (Fig.3).

## DISCUSSION

Traditionally the beneficial properties of extra virgin olive oil (EVOO) have been attributed to its high content of monounsaturated fatty acids (MUFA) which represent up to 80% of its total lipid composition. Recent evidence has shown that the minor components of the extra virgin olive oil (EVOO), as the phenolic compounds and other compounds with antioxidant actions, determine an increase of the healthy characteristics of the oil itself (10).



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These components constitute only 1-2% of the EVOO and are completely absent in other types of oils derived from fruits or seeds (11).

The nutritional properties and antioxidants of the EVOO are related to the presence and concentration of tocopherols, carotenoids and phenolic compounds, which have great importance for human health (12). Extra virgin olive oils contain different classes of phenolic compounds such as phenyl alcohol (hydroxytyrosol and tyrosol), cynic acid (caffeic and p-coumaric acid) and benzoic acid (vanillic acid), flavones (apigenin and luteolin) and secoiridoids (oleuropein and ligitroside derivatives) (13). The main polyphenol in EVOO, hydroxytyrosol, is a ROS scavenger that reduces platelet aggregation and oxidized LDL (14). Oleuropein is an anti-inflammatory molecule that promotes the production of nitric oxide in macrophages (15). The oleocanthal exerts ibuprofen-like anti-inflammatory properties (16, 17). Polyphenol-rich EVOO is capable of reducing heterocyclic amines and plasma levels of C-reactive protein (18).

The study by Ichihashi et al. has highlighted that the topical daily use of olive oil after tanning can delay and reduce skin cancer induced by ultraviolet light (UV), through the decrease in the levels of 8-hydroxydeoxyguanosine, induced by oxygen-reactive species which it is responsible for genetic mutations (19). Kiechl-Kohlendorfer et al. also showed that daily application of olive oil could reduce the risk of dermatitis in children and that EVOO showing better effects than an emollient cream (20). In patients with nasopharyngeal carcinoma in chemo and radiotherapy, the use of extra virgin olive oil has significantly reduced acute radiation-induced dermatitis (21).

Furthermore, the study by Fancello et al. has shown the presence of probiotic bacteria such as *L. rhamnosus* and *Lactobacillus casei* (22), therefore an anti-bacterial action which constitutes a further beneficial feature of EVOO. Nutrigenomic studies by De Santis et al. have demonstrated that EVOO cultivars, characterized by a high content of polyphenols, were able to act on transcriptome and to modulate the expression of different transcripts of miRNAs involved in different ways, for example, glucose/lipids metabolism, cell proliferation, inflammation and cancer to support health-promoting effects. In the context of nutrigenomic modulation, polyphenols must be considered as an active and important component of the EVOO rather than a minor component.

With this in mind, the positive impact of the EVOO on human health could be attributed to a synergistic effect of polyphenolic compounds with the high content of oleic acid (23).

## CONCLUSIONS

The success of the lesion treatment in just 4 days using EVOO exclusively are attributable to the mechanisms described in the discussions.

The traumatic ulcers generally heal within 2 weeks, important dimensions ulcer requires longer periods of time to heal (24). In this case report, the use of EVOO cultivar "Coratina" has significantly reduced healing times.

Despite promising results, further studies are needed to determine if EVOO may be a viable therapeutic alternative in traumatic ulcers healing.

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