



Lifelong treatment is often necessary, although some cases resolve after a while, other cases, left untreated, worsen over time [8].

In some studies medicinal herbal remedies were used to treat rosacea patients. Herbal oils such as Tee Tree , Hemp seed and oil of oregano, a flowering plant in the mint family (Lamiaceae) were used that be effective at killing the skin mite associated with rosacea and reducing the dermal inflammation and strengthening and making better able of skin to resist bacterial, viral and fungal infections [9].

The progress of today medical science is oriented to develop new technologies allowing not only highly effective treating diseases, but also preventing them. One of such progressive approaches is ozone therapy. Ozone or  $O_3$  is a triatomic very reactive form of oxygen that easily can break off and combine with other molecules oxidize them. Ozone effects on toxins, bacteria, molds, mildew, fungus, cancer cells and viruses in a variety of ways [10]. The problem of rosacea is the internal state of the organism, therefore it should be treated not only from the outside, but also inside and this task can be successfully done by ozone producing a detoxication and increasing or modulating the body immunity. Ozone disrupts the integrity of the organism cell envelope such as *Demodex* through oxidation of the phospholipids and lipoproteins [11].

One of the medical applications of ozone in skin disorders such as rosacea is combining ozone with herbal oils like olive oil. As ozonate olive oil has antibacterial and antiviral

effect and by minimizing pathogen diffusion and enhancing microcirculation, reduces the swelling, destroys the pathogen and allows a rapid healing [12].

Whereas the high therapeutic efficiency of ozone therapy can be considered in dermatocosmetology, in this study the effect of ozonate olive oil was checked on two woman cases suffered from rosacea.

### CASES HISTORY

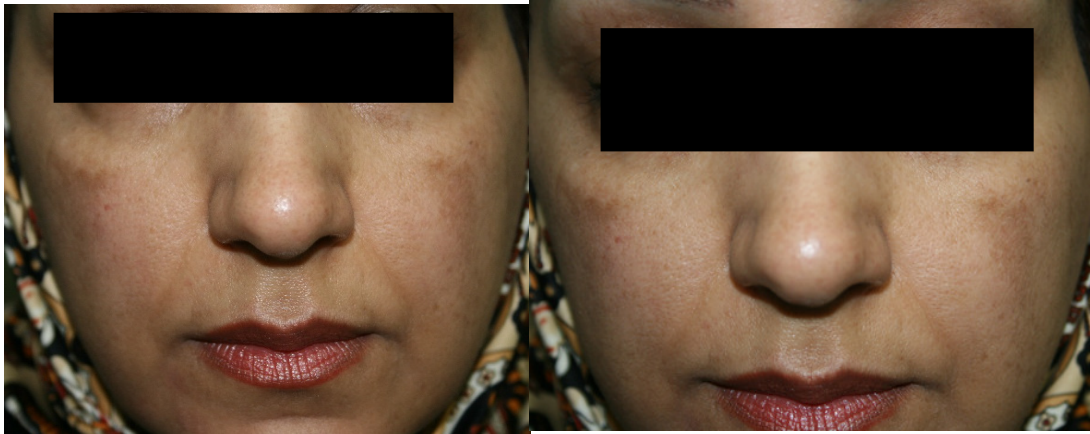
Case-1 was a married Iranian woman in the age of 61 years presented with severe form of rosacea and signs such as sting, dryness, flake and red bumps of face skin. Other areas were uninvolved. Duration of rosacea skin rash was 6 years. Although she afflicted night blindness, her past medical history was not contributory. Also there was a history of autoimmune diseases such as hypothyroidism among her first-degree relative. Even though she had used antibiotic and cream of doxycycline , the lesions did not resolve. The patient was treated with ozonate olive oil for 1 month. The healing indication of rosacea was reduction in facial redness, itching, burning and the number of inflammatory lesions. About 2 weeks after treatment, the case showed relative clinical improvement with regress of intensity of erythema, itching and dryness and flake of facial skin. (**Figure 1**). The patient was followed up from May to September 2016 and any exacerbation of attenuated lesions was not observed during this time.



**Figure 1.** Left and right images are respectively before and after treatment with ozonate olive oil in case-1. The desired lesions were marked with arrow.

Case-2, a 55-year-old Iranian married woman, was admitted with facial redness, sting, dryness and flake during last 30 year. Her scalp and neck were normal. She had been treated with emollients and sunscreen of tiredness at last. Her personal history was significant for thyroid gland and uterus cancers, cardiac arrhythmia and minor depression. She stated history of liver and breast cancers among her first-degree

relatives. Her 27 year-old daughter also was suffered from rosacea. The patient was treated with ozonate olive oil for 1 month. The recovery index of rosacea was measured in terms of reduction in facial redness, itching, burning and the number of inflammatory lesions. There was slightly a reduction of mentioned signs in evolved areas during treatment (**Figure 2**).



**Figure 2.** Left and right images are respectively before and after treatment with ozonated olive oil in case-2. The desired lesions were marked with arrows.

### CONCLUSION

In this study the effect of ozonated olive oil was evaluated on two cases of females with proven rosacea and relative satisfaction with this therapeutic method was reported. In agreement with our findings, *S.L. Krivatkin and et al* found disappearance of clinical picture and considerable improvement - in 40% of 452 rosacea patients following ozone therapy [13]. Also *E.V. Krivatkina* treated 61 patients suffered from classic form of rosacea by ozone therapy. Their results showed disappearance of clinical picture in 5 cases (10%), considerable improvement in 15 cases (29%), improvement in 26 cases (50%) and no favorable effect in 6 cases (11%) [13]. More over Bitkina OA assayed oxidative stress level in eighty patients with different clinical types of rosacea and used an ozone-oxygen mixture in order to treat patients. Results showed the possible antioxidant imbalance in the pathogenesis of rosacea and treatment with an oxidative therapy options in particular ozone-oxygen mixture were proposed [14]. According to obtained data it is likely that ozonated olive oil plays a useful role as adjunctive therapy in the treatment of rosacea.

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