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# Ozonated olive oils and the troubles

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## ABSTRACT

One of the commonly used methods for ozone therapy is ozonated oils. Most prominent type of used oils is extra virgin olive oil. But still, each type of unsaturated oils may be used for ozonation. There are a lot of wrong knowledge on the internet about ozonated oils and its use as well. Just like other ozone therapy studies, also the studies about ozone oils are inadequate to avoid incorrect knowledge. Current data about ozone oil and its benefits are produced by supplier who oversees financial interests and make misinformation. Despite the rapidly increasing ozone oil sales through the internet, its quality and efficacy is still controversial. Dozens of companies and web sites may be easily found to buy ozonated oil. But, very few of these products are reliable, and contain sufficiently ozonated oil. This article aimed to introduce the troubles about ozonated oils and so to inform ozonated oil users.

**KEY WORDS:** Ozonated oils, ozone therapy, troubles

## INTRODUCTION

### What is Ozone?

Ozone ( $O_3$ ), a gas composed of three oxygen atoms, is continuously produced in the stratosphere by UV radiation or during the electric discharge of lightning from atmospheric oxygen. Although ozone is not a radical molecule, it is far more reactive than oxygen. Also, ozone is the third strongest oxidative agent after fluorine and persulphate. Ozone has the ability to oxidize organic and/or inorganic compounds by reacting with them immediately. So, ozone may oxidize plasma membrane of all microorganisms including bacteria, virus and fungus, and eventually shred these microorganisms. Therefore, ozone has been used as a disinfectant for many years.<sup>[1]</sup> Ozone has an odor just like the smell of freshly cut grass, and also a similar odor may be felt from all materials contacted with ozone.

### Medical Ozone Therapy

One of usage area for ozone is medical ozone therapy. The beginning of scientific studies about medical ozone therapy is based on the 1950s. To date, medical ozone therapy has been used for the treatment of a number of pathological conditions with an increasing interest. A large part of data about this therapy is resulted from experiences of special ozone centers or individual observations of practitioners interested in ozone therapy. Current medical indications of ozone therapy have not been adequately supported with controlled experimental and clinical studies yet. Even so, millions of people from both sexes and various age groups have been treated with ozone therapy so far, and it is still ongoing. This widespread use of ozone therapy has brought new ozone studies along with.

In medical ozone therapy, ozone is produced by converting oxygen provided from 100% oxygen containing medical cylinder to ozone by using of a generator. Ozone dissolves more easily in fluids including plasma than oxygen, and when the blood is ozonated, ozone reacts with hydrosoluble antioxidants, free fatty acids and proteins in plasma.<sup>[2]</sup>

### Ozonated Oils (Ozone Oils)

When the blood is ozonated, ozone reacts with all soluble antioxidants and poly unsaturated fatty acids and oxidizes them.<sup>[3]</sup> This mechanism suggested that some liquid oils may be used in treatment of various pathologies after ozonation. This treatment potential may be existed thanks to the presence of unsaturated double bonds of fatty acids in these liquid oils that would be ozonated. As a result of reactivity of ozone, ozone oxidizes these double bounds and one oxygen atom joins unsaturated double bounds.

Ozonated oils are used in many diseases such as joint and skin pathologies especially.<sup>[4]</sup> There are a lot of wrong knowledge on the internet about ozonated oils and its use. Just like other ozone therapy studies, also the studies about ozone oils are inadequate to avoid incorrect knowledge. Current data about ozone oil and its benefits are produced by supplier who oversees financial interests, and they usually make misinformation. This vicious circle may be prevented with controlled scientific studies demonstrating the real effect of ozone therapy.<sup>[5]</sup>

### Troubles How Do We Recognize Sufficiently Ozonated Oils?

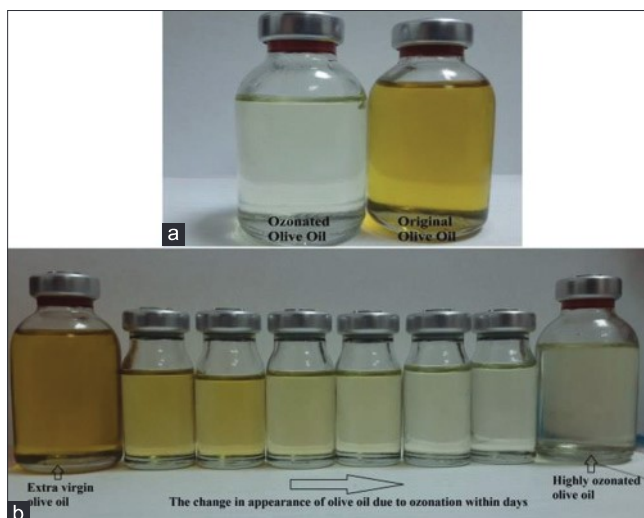
Despite the rapidly increasing ozone oil sales through the internet, its quality and efficacy are still controversial. Dozens



**Figure 1:** The appearance of one of ozonated oils sold in a web site. The color of the product suggests that it was not ozonated sufficiently

of companies and web sites may be easily found to buy ozonated oil. But, very few of these products are reliable, and contain sufficiently ozonated oil [Figure 1]. If you want to buy a sufficiently ozonated and effective oil, following features should be considered.

1. Extra virgin olive oil can have a color in different shades of green. When olive oil is ozonated suitably and sufficiently, it lost original color and eventually gains a colorless appearance just like water [Figure 2a].
2. Also density of oil increases in direct proportion with ozonation time. So, together with an effective ozonation process, ozonated olive oil will be more transparent and viscous than extra virgin olive oil gradually [Figure 2b].<sup>[6]</sup>
3. Ozonated oils should be marketed in dark glass bottles to avoid sunlight. But, because color of oil couldn't be seen, the quality of oil ozonation may not be understood by customers. In such a situation, color of product should be determined by opening bottle. As mentioned above, ozone has a unique odor, and odor of ozonated oils also would be similar to odor of ozone. This odor restricts its use by some sensitive users. Therefore some manufacturers have developed products by adding a little scent into ozonated oil in order to prevent irritating ozone odor. Even as such, also fewer odors than previous one may be felt. This feature may be a good indicator for determining the quality of the oil. On the other hand, because of adding a colored scent may change transparent color of ozonated oil, it may be assumed that product was not ozonated. In this case, an explanation about the features of the product should be requested from the manufacturer or vendor.



**Figure 2:** Together with ozonation, the olive oil begins to lose its original color. This situation shows the saturation with oxygen of double bounds in unsaturated fatty acids. Highly ozonated oil is more transparent and viscous than olive oil

## CONCLUSION

All these features will allow us to buy good quality ozone oil. All mentioned features about a high quality and effective ozonated oil require a longer period of ozonation and the use of additional material. Therefore, although it is not a general rule, high quality ozonated oil will not be cheap.

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