



A brief history of the development of the products of the Medinat line

Prof. Lamberto Re began to cooperate with Medinat in the last decade of the past century. After more than forty years of experience at the Medical Faculty of the Ancona University in the field of neurophysiology, pharmacology and pharmacognosy, he was fascinated by the surprising effects induced by a gas like ozone (O_3). In fact, this gas, very effective in numerous apparently heterogeneous human diseases, has also shown surprising effects in the field of beauty, now allowing it to enter fully into the field of cosmetology and body care.

The term cosmetics, from the Greek “*Ornament*”, other than for “*skin care*” can also be defined as a tool to add fragrance to the body. The same FDA indicates cosmetics as products “*intended to be applied to the human body for cleansing, beautifying, promoting attractiveness, or altering the appearance without affecting the body's structure or functions*”.

The above statements make us understand why we had to take the highest accuracy in creating derivatives from a gas so particular like O_3 . Furthermore, the higher the quality of the final products, the greater the attention and care must be taken in preserving them from deterioration, compatibility with packaging components and more. Thanks to the huge experience of Prof. Re we were able to create ozonated creams of the highest quality and preserve their quality and effectiveness over time. Indeed, in our opinion, to create products of excellence in this sector it is essential to take into account the high reactivity and instability of the main ingredient in the various production processes starting from preparation, formulation and packaging, especially to ensure a high standard of safety given their use in both humans and animals.

The domestic use of O_3 as a pure gas is not recommended while it can be used in the clinic or in any other place where it can be prepared freshly through O_3 generators and in environments equipped with air quality control systems. The generators, by exploiting an electrical effect called “*corona*”, are able to transform the oxygen molecule into medical O_3 . In order to create excellent cosmetic creams, it was essential to discover a method that would allow the implementation of the O_3 molecule in more complex chemical compounds such as vegetable oils.

Nevertheless, after the first attempt to prepare these products the initial ozonated oils showed an unpleasant smell making them not suitable for such a sophisticated field as the cosmetic one, practically hindering its marketability and wider diffusion for domestic use, at least at that time. Therefore, our commitment, through the professionalism of Prof. Re, was to study methods that could guarantee the creation of products capable of maintaining the stability of the O_3 molecule over time as well as endowing them with organoleptic characteristics and other properties more appropriate to the cosmetic industry and beyond.

Our main aim was to create a line of products based on ozonated vegetable oil, stable over the time, and enriched with vegetable substances that would enhance both cosmetic and clinical effects following the enlightening suggestions of Prof. Lamberto Re. We therefore began to devote all his knowledge both to the biochemical mechanisms induced by low doses of O_3 and to the ethnobotanical and natural derivatives that could best be combined with O_3 , enhancing its properties. As we will see in the following section, in order to obtain high quality products it is essential to have all the know-how regarding the characteristics of this wonderful gas, both from the chemical and physical points of view and on its activities in the fields of biology and medicine.

Medinat represents an excellence in the sector thanks to the studies of Prof. Lamberto Re and the continuous insights into the activities induced by O_3 to keep our body healthy, beautiful and long-lived.

Why use them over a competitor brand

When Prof. Re started this activity about 30 years ago, there were many ozonated oils, mostly proposed by the manufacturers of generators or more simply prepared in the same clinics where O_3 is administered for the various treatments. In fact, the preparation of an ozonated oil is in itself extremely simple as it is enough to bubbling O_3 at high concentrations on a vegetable oil. During the reaction of O_3 with the fatty acid present in vegetable oils, lipoperoxides and ozonides are formed. In chemistry, especially biochemistry, a **fatty acid** is a carboxylic acid often with a long unbranched aliphatic tail (chain), which is either saturated or unsaturated.

The above somewhat empirical method, however, was sufficient to perform tests on patients, sometimes observing surprising effects ranging from wound healing, skin care, to many other characteristic actions more related with cosmetology. Nevertheless, the word *ozonated* is itself without scientific meaning if it is not associated with *how many* peroxides are present in the oil. In fact, from a therapeutic point of view, the ozonide compositions have the capacity to deliver O_3 and/or other useful species deep within the skin without causing primary irritation. Anyway, to obtain products at the highest level, such as those of the Medinat line, simple ozonation is not enough to maintain the high quality. The best results in terms of quality, could be obtained better with patented techniques that guarantee the stability, the organoleptic qualities, the chemical-physical specifications and the tolerability.

In fact, the Medinat line stands out in that, besides ensuring the quality of the finished product, it takes care of the marketing path from the packaging, to the sale and to the final use of the customer. The choice of the most suitable materials for the containers, which have the task of maintaining the levels of the active ingredients notoriously highly reactive, is also fundamental for this purpose. Indeed, an ozonized oil of high quality used for medical or cosmetologic purposes should be prepared following the good manufacturing practice. That means, a strictly quality control during its production in a high performance reactor by fixing the quality of the raw materials taking into account the most important reaction variables such as: time of reaction, O_3 concentration, O_3 sources, bubbling size, reaction temperature and others.

A high quality control of the active component (ozonized oil) should involve chemical-physical analysis, microbiological analysis and biological analysis. Biological analysis should indicate the pharmacological effect attributed to the oil and the absence of toxicity. Microbiology control should then demonstrate the microbiological quality of the preparation. Finally, chemical/physical analysis will be done to guarantee the homogeneous chemical content of active component and its stability.

Chemical analysis will involve the measurement of the content of lipoperoxides and aldehydes, iodine and saponification indices. Physical analysis will take into consideration the acid values, density and viscosity of the active component. Test will be done according to the pharmacopeia methods and should be also used to demonstrate the stability of the preparation. All of the above has led to the birth of a surprisingly effective and stable active principle which represents the main ingredient of the Medinat formulations (OzonVital[®]) being diluted in the various creams at different concentrations and therefore at different percentages of peroxides.

The first four amazing products of the Medinat line have been launched in the international market on September 2009:

OleoSan[®] mainly used as potent non-specific germicide;

OleoRevive[®] active on micro-circulation, very useful in cellulites and others skin disorders;

OleoSport[®] used mainly in pain and inflammatory joint diseases other than physical activity;

OzonAge[®] a delicate and soft purifying cream for neck and face with antiage action.

Following the big success of the first 4 products and on the request of our distributors worldwide, Medinat and Prof. Re proposed in 2020 four new formulations based on the same active ingredient OzonVital[®]:

OzonAgeNight[®] a delicate and emollient face and neck cream for night uses;

OzoFaceCleanser[®] to clean the face skin after make up with a gentle cleaning ozonated cream;

OzoHand[®] to keep safe and protected your hands;

OzoSolar[®] to protect from the sun radiation and from the impurity of the air.

OzoDoI[®] for a lenitive effect and useful on pain and inflammation and after medical ozone injection.

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Why an ozone cream over some of the other beauty creams

To our opinion most of the beauty creams are excellent tools to take care of the skin exalting the main functions of an healthy tissue: *hygienic*, *eutrophic* and *aesthetic*. The addition of such a natural component as ozonated oil helps harmoniously to satisfy and complete the three functions, further enhancing the effect of cosmetic creams without interacting with their specific components.

In light of the sterilizing (*hygiene*), antioxidant (*eutrophic*) and tissue remodeling (*aesthetic*) effects discovered and attributed by various scientific works to O_3 , it is easy to understand how the combination of this fundamental active principle will be destined to complete the cosmetic effects of common creams. The ozonized vegetable oils and fats have been widely used in cosmetics. Since the 1950s, in France, ozonated solutions have been used as cosmetics, directly on the skin or in baths, as stimulants, purifiers, decongestants, relaxants and regenerators of the epidermal tissue. The properties for stimulating the tissue regeneration, the oxygenation of the cells and tissues and the moderated whitening properties are added to the acknowledged germicidal activity of the products from the ozonation of unsaturated compounds, such as terpenes, fatty acids, triglycerides and vegetable oils in the cosmetic applications.

The highly oxygenated compounds, such as the ozonized vegetable oils, favor the flexibility and the softening of the skin and are used also to prepare creams for repairing the epithelial tissue. Furthermore, considering that among the other definitions of cosmetics we can find “*correcting body odors*”, “*protect tissues*” and “*keeping skin in good condition*”, what could be better than enriching substances with cosmetic properties with a high quality ozonated oil in the light of the effects produced by this gas such as the deodorant, antioxidant and regenerating one? The Medinat Brand is characterized by the presence of sunflower oil because thanks to its higher percentage of fatty acids and the original method developed by Prof. Re, it can hold more O_3 . The binding of O_3 to unsaturated compounds has been extensively studied and the biological activity of the reaction products has been known for a long time. Two main groups of compounds are remarkable among the ozonized unsaturated compounds for pharmaceutical and cosmetic uses: the ozonized terpenes and the ozonized vegetable oils.

When the O_3 reaction occurs with the unsaturated fatty acids that compose the triglycerides present in the vegetable oils and fats, a series of peroxidic products are formed (hydroperoxides, ozonides, diperoxides, peroxides and polyperoxides) that are responsible for the wide biological activity of those ozonized vegetable oils. The mechanism of this reaction is well defined, as well as the conditions necessary for the development of the reaction in order to enhance the preferential formation of any of those peroxidic compounds. Different terminology have been used regarding the amount of peroxides, and also if there is no unique definition, we prefer to use the term **Peroxides Index** (1200 in the case of OzonVital®). Some manufacturer use the term **Potential Ozonide Index**, defined as the weight of the fatty acids included in the oil formula (153 in the case of **sunflower oil**). Other ozonated oils in the market are based on **oleic acid**, a mono-unsaturated omega-9 fatty acid found in various animal and vegetable sources with a weight of the fatty acids of 92.

Medinat has its bases in Camerano, Ancona province, Italy, and thanks to the experience and cooperation of Prof. Re it has developed and tested the unique cosmetics enriched with OzonVital® that received the appreciation for their high quality and stability maintaining their activity along years with the collaboration of the Manufacturer Lacoser, located in Venice, Italy, one of the best Good Quality Laboratory of Cosmetics in Italy.



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