



## OPTIMIZED APPROACH TO THE TREATMENT OF TRICHOPHYTOSIS

Mirodilova F.B.

Abboskhanova F.Kh.

Tashkent Medical Academy

<https://doi.org/10.5281/zenodo.15031085>

This article outlines the principles of rational use of ozonated olive oil for the treatment of various forms of trichophytosis.

**Keywords:** olive oil, ozone, trichophytosis.

The German chemist Christian Friedrich Schönbein is considered the founder of ozonotherapy. In 1840, he discovered the "smelly gas" that appeared when an electric discharge passed through water. During World War I, gaseous ozone was used to treat gas post-traumatic gangrene, infected wounds, burns, poisoning, and fistulas in German soldiers.

Currently, ozonotherapy is a recognized treatment method in many countries. It is used for treating acute and chronic bacterial, viral, and fungal infections, eye diseases, as well as dermatological, pulmonary, renal, hematological, and neurodegenerative conditions. Ozonotherapy influences biochemical, physiological, and pharmacological processes, providing a clear justification for its therapeutic effect while preventing harmful consequences.

Ozonotherapy can be used in various forms: dry baths, oxygen-ozone mixtures, dressings with ozonated water or ozonated oil, intravenous or intra-articular administration of ozonated infusion fluids, or autogemotherapy.

In modern medicine, particular interest lies in treatment methods that are highly effective against the causative agents of skin diseases and secondary infections, while simultaneously increasing the skin's resistance, enhancing the effectiveness of antimicrobial drugs, and stimulating the immune system when penetrating deep into tissues. In this regard, the use of medical ozone in the complex treatment of trichophytosis is a promising approach, providing multifactorial non-specific effects.

Ozonotherapy with olive oil is one of the widely used methods due to its simplicity and accessibility. The regenerative and antiseptic properties of ozonated olive oil are much stronger than those of ozonated solutions due to the formation of ozonides, complex esters of unsaturated fatty acids, which provide a longer-lasting effect on the biological substrate. When penetrating the tissues, ozonated olive oil is capable of releasing active oxygen, improving circulation and accelerating the processes of granulation and epithelialization of pathological foci.

Clinical observations were carried out at the Tashkent Regional Dermatovenereological Dispensary. Seventy-two patients with various forms of trichophytosis (TF) were examined. Among them, 38 were boys (65.3%) and 34 were girls (34.7%), aged 3 to 17 years (average age  $10.6 \pm 3.9$  years).

To evaluate the effectiveness of trichophytosis therapy, the patients were randomly divided into groups (Table 1).

**Table 1.**

**Distribution of TF patients into groups based on the forms of the disease and the treatment performed**

Form of Disease	Group 1 (Traditional Treatment)	Group 2 (Traditional Ozonotherapy)	Treatment +
Superficial TF, n=28	15	13	
Infiltrative TF, n=21	11	10	
Infiltrative-purulent TF, n=23	12	11	
Control, n=38	34	34	

The first group (control) consisted of 38 patients with various clinical forms of trichophytosis, who received traditional antifungal treatment according to the M3 RUz standards. Patients were prescribed the antifungal **Terbinafine** (250 mg), with the dosage adjusted according to the patient's body weight.

The first group (control) consisted of 38 patients with various clinical forms of trichophytosis, who received traditional antifungal treatment according to the M3 RUz standards. The patients were prescribed the antifungal **Terbinafine** (250 mg). The dosage of the medication was calculated at 10 mg/kg of the patient's body weight, resulting in the following dosages: for patients weighing up to 20 kg – 62.5 mg (1/4 tablet), 20–40 kg – 125 mg (1/2 tablet), and over 40 kg – 250 mg (1 tablet). The medication was taken once daily after meals for 14 days. After two consecutive negative mycological results, the patient was discharged from the hospital for further outpatient observation.

Topical treatments included a 2.5% iodine solution applied as an antifungal to the affected areas and around the perimeter of the lesions, and 40% ichthyol ointment to absorb acute inflammatory phenomena and infiltrations. After reducing the inflammatory symptoms, a 10% sulfur ointment was applied under an occlusive dressing as an antiparasitic agent.

For lesions located on the scalp, patients underwent manual epilation of the hair in the affected areas and near the skin lesions. Disinfecting 10% ichthyol ointment was used, as well as resorptive ointments, including 10% sulfur ointment.

The second group (comparison) consisted of patients with various clinical types of trichophytosis. These patients received traditional treatment, and at the same time, cotton swabs soaked in ozonated olive oil with a high peroxide value were applied to the affected areas after preliminary cleaning and removal of scales and ointment residues, left overnight. To increase the effectiveness of the topical treatment for trichophytosis, gauze swabs soaked in ozonated olive oil were applied every night to the affected areas after preliminary disinfection of the skin and removal of scales and ointment residues.

In addition, all patients in both groups were given auxiliary medications such as multivitamins, desensitizing agents, and broad-spectrum antibiotics for severe forms of mycosis. The effectiveness of the treatment was assessed by the regression of clinical manifestations of the mycosis (clinical cure), microscopic examination results for fungi (mycological cure), and the disappearance of clinical symptoms of trichophytosis.

The criteria for evaluating the effectiveness of treatment for trichophytosis included the time to complete cessation of itching, the onset of inflammatory regression, the disappearance

of primary and secondary morphological signs of skin damage, the onset of healthy hair growth, and the disappearance of fungi.

The results of clinical observations showed that in traditional treatment, the complete cessation of itching in patients with superficial, infiltrative, and infiltrative-purulent trichophytosis occurred after  $3.2 \pm 0.21$ ;  $5.9 \pm 0.33$ ; and  $6.5 \pm 0.36$  days, respectively.

When analyzing the time to complete cessation of itching in patients with trichophytosis who were treated with ozonotherapy as part of their traditional treatment regimen (Group 2), it was found that it occurred after  $2.1 \pm 0.10$  -  $2.2 \pm 0.13$  days for superficial forms,  $3.3 \pm 0.26$  -  $3.0 \pm 0.15$  days for infiltrative forms, and  $4.9 \pm 0.22$  -  $3.8 \pm 0.20$  days for infiltrative-purulent forms. This indicates an increase in effectiveness compared to traditional treatment by 20.8%, 28.3%, and 32.2%, respectively.

Similar changes were noted when evaluating the reduction in the time for the disappearance of primary and secondary morphological elements on the skin surface, such as pustules, vesicles, scales, crusts, small nodules, suppuration, and folliculitis. In the groups of patients with superficial, infiltrative, and infiltrative-purulent forms of trichophytosis, the disappearance of primary and secondary morphological signs occurred after  $6.7 \pm 0.48$ ,  $13.1 \pm 1.40$ , and  $19.1 \pm 2.10$  days, respectively. The inclusion of ozonotherapy in the traditional treatment reduced the time for the disappearance of these morphological signs in the superficial form to  $5.8 \pm 1.62$  -  $10.1 \pm 1.81$  days; for the infiltrative form to  $11.2 \pm 0.40$  -  $13.2 \pm 0.52$  days; and for the infiltrative-purulent form to  $16.1 \pm 1.89$  -  $20.3 \pm 1.70$  days. Thus, the effectiveness of traditional treatment in the second group improved by 7.2%, 7.8%, and 8.5%, respectively.

The duration of inflammation regression in patients with infiltrative and infiltrative-purulent forms of trichophytosis was  $5.2 \pm 0.50$  and  $13.3 \pm 1.06$  days. It should be noted that ozonotherapy increased the effectiveness of traditional treatment in patients with infiltrative forms by 24.1% and with infiltrative-purulent forms by 9.2%, based on the regression of the inflammation process.

When analyzing the onset of healthy hair growth, there was a clear difference between the groups studied. In traditional treatment, the onset of healthy hair growth in patients with superficial, infiltrative, and infiltrative-purulent forms occurred on day  $24.5 \pm 1.65$ ,  $30.3 \pm 2.16$ , and  $34.6 \pm 2.10$ , respectively. In patients with trichophytosis who received ozonotherapy as part of their treatment, the onset of healthy hair growth occurred after  $18.1 \pm 1.16$ ,  $26.5 \pm 1.23$ , and  $25.0 \pm 1.68$  days for the respective forms. Therefore, the effectiveness of traditional treatment when ozonotherapy was added increased by 15.0%, 6.7%, and 16.1%, respectively, in the superficial, infiltrative, and infiltrative-purulent forms.

Undoubtedly, the time to complete cessation of itching, the disappearance of primary and secondary morphological elements, the regression of the inflammation process, and the time to the onset of healthy hair growth in the groups studied were determined by the different treatment methods and the time for fungi disappearance.

In traditional treatment, the disappearance of fungi in patients with superficial, infiltrative, and infiltrative-purulent forms of trichophytosis was noted after  $8.3 \pm 1.12$ ,  $11.1 \pm 1.19$ , and  $14.2 \pm 1.84$  days, respectively. The inclusion of ozonotherapy in the second group improved the effectiveness of traditional antifungal treatment, which resulted in the disappearance of fungi in  $6.3 \pm 0.70$ ,  $9.7 \pm 0.86$ , and  $12.6 \pm 0.99$  days for the respective forms.

In the second group, the traditional antifungal therapy improved by 24.0%, 12.6%, and 11.3% for the superficial, infiltrative, and infiltrative-purulent forms.

Thus, in traditional treatment, the average length of stay in the hospital for patients with trichophytosis was  $20.2 \pm 3.04$  days. In the second group, the treatment duration was  $13.2 \pm 0.98$  days, which means that compared to the first group, the treatment duration was reduced by 7 days ( $P < 0.01$ ). The inclusion of ozonated oil in the traditional treatment regimen for patients with trichophytosis increased its effectiveness by 17.2%.

In conclusion, the use of ozonated olive oil in the complex external therapy for patients with various forms of trichophytosis is a safe and effective treatment method. Ozonated oil is an innovative, practical, and harmless treatment method that has demonstrated interesting therapeutic properties.

### Literature:

- 1.Zanjani V., Ghasemi A., Torabzadeh H. et al. Bleaching effect of ozone on pigmented teeth. Journal of Dental Research. 2015;12:20–24.
- 2.Domb W.C. Ozone Therapy in Dentistry. Interventional neuroradiology. 2014;20:632 – 636.
- 3.Louw A., Diener I., Butler D.S., Puenteadura E.J. The Effect of Neuroscience Education on Pain, Disability, Anxiety, and Stress in Chronic Musculoskeletal Pain. Archives of Physical Medicine and Rehabilitation. 2011;92:2041–2056.
- 4.Lubojanski A., Dobrzynski, M., Nowak, N. et al. Application of Selected Nanomaterials and Ozone in Modern Clinical Dentistry. Nanomaterials. 2021;11:259.
- 5.Вайсов А.Ш., Миродиловa Ф. Б., Исмаилова Г.А. Проблемы диагностики и лечения трихофитии у больных с гипотиреоидным состоянием. Монография. Ташкент 2021.