# THE EFFECTIVENESS OF THE USE OF FLAVONOIDS IN THE COMPLEX TREATMENT OF PSORIASIS IN PATIENTS WITH GRADE I-II ALIMENTARY OBESITY

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Psoriasis is one of the chronic dermatoses with unexplained pathogenesis and significant prevalence among the population. Chronic and often severe course of the disease leads to disability, and sometimes to disability [1]. The lack of a clear understanding of the etiology and pathogenesis makes it possible to attribute this dermatosis to the most important medical and economic health problems [8]. It is believed that psoriasis refers to genetically determined diseases with predominant skin damage, which is associated with impaired keratinocyte proliferation and the development of inflammatory processes [2].

An undoubted relationship between psoriasis and obesity has been established [3]. In the literature, the question of identical pathogenetic mechanisms of inflammatory processes in psoriasis and obesity, forming a vicious circle at the level of the immune system, which must be broken for the successful treatment of these diseases, is widely covered [4]. Obesity can be either an independent multifactorial disease - primary obesity (alimentary-constitutional), or the syndrome accompanying the course of other diseases - secondary obesity (symptomatic). In the structure of morbidity, primary obesity occurs in 95% of patients, secondary - only in 5% [7,9]. A person is considered obese if the body mass index (BMI) exceeds 30 kg / m². According to the results of previous studies, we found that alimentary obesity in patients with psoriasis leads to metabolic disorders complicating the course of dermatosis, leading to the ineffectiveness of standard methods of therapy and frequent exacerbations of psoriatic disease [5].

In patients with psoriasis in the blood serum, an increase in the level of lipid metabolism products, namely cholesterol, triglycerides and free fatty acids, as well as a change in the ratio of the fractional content of phospholipids in erythrocyte membranes, is observed. Considering the pathogenetic mechanisms of the development of this disease and increasing the effectiveness, it is advisable to include

drugs with antioxidant properties in complex treatment [6]. Antioxidants are a group of biologically active substances that has the ability to interact with various reactogenic oxidizing agents, reactive oxygen species and other free radicals, which leads to their complete or partial inactivation. [7].

Antioxidants are classified into drugs of direct and indirect action, as well as by the origin of enzymatic (superoxide dismutase, catalase, glution peroxidase, glutathione reductase) and non-enzymatic nature, the latter in turn are divided into substances of endogenous (coenzyme, Q10, glutathione and others) , C, E, carotenoids, flavonoids are their synthetic analogues - ubiquion, glutathione, trace elements - selenium) origin. A separate group of drugs are polyphenols, which are obtained from natural sources and by chemical synthesis. Polyphenols are components of plants, the widest representative is flavonoids. Flavonoids are plant pigments, have two benzyl nuclei, connected by a tri-char fragment. They act on different biological targets, inhibit lipid peroxidation by destroying free radicals, or preventing their formation, which leads to their high antioxidant activity. The most famous representatives of this group include resveratrol, rutin, silymarin, curcumin, quercetin.

Resveratrol is a molecule chemically known as 3,5,4-trihydroxy-trans-stilbene, a natural phytoalexin, a bioflavonoid found in red wine, grapes, peanuts, cocoa beans, Japanese mountaineer and others.

Resveratrol is a highly effective, environmentally friendly plant that consists of a unique set of essential body components, including amino acids, multivitamins, a wide range of trace elements and mineral salts, polyunsaturated fatty acids, pigments, etc. We used resveratrol (Evelor) in the form of tablets of 50 mg manufacturer LLC SHP "Algopharm", Simferopol TU U 15.8-23665400-002-003.

This work is devoted to the search for new treatments for psoriasis in obese patients. This article describes the relationship between the clinical picture and lipid peroxidation in patients with psoriasis with obesity and the feasibility of including in the treatment of drugs with antioxidant properties.

**The aim of the research** is to study the effectiveness of the use of flavonoids in the complex treatment of psoriasis in patients with nutritional obesity of the I-II degree.

**Materials and methods.**

The study group consisted of 80 patients with advanced uncomplicated plaque psoriasis, a progressive stage, moderate progression with concomitant nutritional obesity of the I-II degree, 51 (64%) men and 29 (36%) women aged 35 to 65 years who were divided into 2 groups: patients from group I received conventional treatment, patients from group II received treatment in accordance with the protocol + Resveratrol. The traditional treatment of patients consisted in the appointment of detoxification therapy, desensitizing drugs, hepatoprotectors, antihistamines, sedatives, and vitamin therapy. The drug Resveratrol (Evelor) was prescribed 1 capsule 2 times a day for 2 months.

To assess the severity of psoriasis, the PASI (Psoriatic Area and Severity Index) index was used [4].

To assess the severity of alimentary obesity, a body mass index (BMI) was determined [10]. People with a BMI of 30–40 kg / m² were included in the study.

The scope of laboratory tests included the use of generally accepted methods of general clinical and biochemical blood tests taken in the morning on an empty stomach in the morning. The study of lipid metabolism was carried out by assessing the level of total cholesterol (OH) and triglycerides (TG), the concentration of cholesterol in the composition of very low density lipoproteins (VLDL cholesterol) was determined by the ratio of TG / 22.5. Dyslipidemia was diagnosed when the level of OX exceeded 5.2 mmol / L, triglyceride higher than 1.7 mmol / L, HLDPVP less than 1.0 mmol / L. Parameters were evaluated according to the criteria of the US National Cholesterol Education Program [].

Examination of patients with psoriasis was carried out twice at the beginning and at the end of treatment.

Statistical processing of the obtained results was carried out using the Statistica 7.0 program. The difference was considered significant with an error probability of $p < 0.05$.

**Results of the research**

Analyzing the results, it was found that the average group index of the PASI index in patients with psoriasis with concomitant nutritional obesity of the I-II degree was - (21.8 ± 1.4), which corresponded to the moderate severity of psoriasis. After a month of adding resveratrol to traditional treatment, a gradual decrease in the number of PASI index points in all patients of group II was more than 75%.

To assess the effectiveness of treatment for patients, studies of the dynamics of the main indicators of a biochemical blood test were carried out, which reflect the severity and activity of psoriasis with concomitant alimentary obesity of the I-II degree before and after treatment (tab. No. 1).

Table number 1

**Dynamics of the main indicators of a biochemical blood test**

| No. | Indicators | Groups before treatment | | Groups after treatment | |
|---|---|---|---|---|---|
| | | I | II | I | II |
| 1 | **Total protein, g/l** | 71,80 ± 1,59 | 70,28 ± 0,89 | 68,3±2,8 | 62,22 ± 0,52 |
| 2 | **Albumin** | 39,99 ± 0,57 | 39,02 ± 0,50 | 46,5±2,5 | 39,03 ± 0,29 |
| 3 | **Globulin, g/l (20-30)** | 26,8±2,3 | 26,7±2,5 | 26,8±2,3 | 26,7±2,5 |
| 4 | **Cholesterol, mmol/l** | 5,32 ± 0,09 | 4,94± 0,12 | 4,99±0,1 | 3,68± 0,08 |

| | | | | | |
|---|---|---|---|---|---|
| 5 | **Total bilirubin, µmol/l** | 19,28±0,48 | 18,24± 0,48 | 17,08±0,48 | 15,28± 0,56 |
| 6 | **ALT, Ed/l** | 26,76±0,29 | 25,32± 0,80 | 24,4± 0,52 | 23,8± 0,52 |
| 7 | **AST, Ed/l** | 25,45±0,48 | 25,41± 0,29 | 22,02± 0,48 | 22,82± 0,48 |
| 8 | **HDL (1.04-1.55 µmol/l)** | 0,98±0,1 | 0,99±0,2 | 1,02±0,1 | 1,3±0,2 |
| 9 | **LDL (0-2.59 µmol/l)** | 3,95±0,25* | 3,78±0,25* | 3,1±0,2 | 2,9±0,15 |
| 10 | **TG, mmol/l (0-1.7)** | 2,4±0,05* | 2,38±0,05* | 1,8±0,08 | 1,5±0,05 |
| 11 | **Glucose, 3-6 mmol/l** | 6,05±0,7 | 6,33±0,5 | 5,5±0,5 | 5,03±0,5 |
| 12 | **Urea, mmol/l (2.5-8.3)** | 5,04±0,23 | 5,04±0,23 | 5,04±0,23 | 5,2±0,21 |
| 13 | **Creatinine, mmol/l (50.0-120.0)** | 87,95±6,7 | 88,25±6,3 | 84,55±6,4 | 80,55±6,7 |

Note: * probability of difference error $p<0.05$

When analyzing the data of a biochemical analysis of blood before treatment, in both groups of patients with psoriasis with concomitant nutritional obesity of the I-II degree, an increase in glucose, total cholesterol, triglycerides and LDL and a decrease in HDL and total protein are observed. And after treatment in patients in both groups there was an improvement in these indicators, which is especially noticeable in patients of group II: an improvement in glucose up to 5.03 ± 0.5 mmol / l, total cholesterol up to 3.68 ± 0.08 mmol / l, triglycerides almost 2 times and LDL up to 2.9 ± 0.15 µmol / L.

Group I patients (control) received traditional complex treatment using sedative therapy (valerian extract in the form of tablets of 0.02 g 3 times a day for 30 days), desensitizing agents (iv 30% sodium thiosulfate solution 10 ml per day) , vitamins (vitamins B6 5% solution of 150 mg per day i / m and vitamin B12 1000 µg i / m, 10 injections each, vitamin A 200 thousand units per day for 30 days), biogenic stimulants (aloe extract, FIBS , plasmol 15 injections per course), immunostimulants: thymalin (10 mg sc daily 10 injections).

In addition to the traditional complex treatment, patients of group II received additionally resveratrol according to the scheme (1 capsule 1 time per day, washed down with 100 g of water, 30 minutes before meals. Resveratrol was intended for 30 days). The effectiveness of treatment was evaluated taking into account the immediate (remission period of psoriatic elements) and long-term (remission

duration, frequency and severity of relapses) clinical results. The effects of treatment are presented in the following table.

Table number 2.

**The effectiveness of treatment of various stages and forms of psoriasis with concomitant nutritional obesity of the I-II degree after the traditional complex treatment and treatment with the addition of resveratrol**

| Name of pathology | Progressive stage, day | | Stationary stage, day | | Stage of remission, day | |
|---|---|---|---|---|---|---|
| | I Group | II Group | I Group | II Group | I Group | II Group |
| Usual psoriasis | 7-8 | 4-6 | 8-12 | 4-6 | 20-45 | 20-22 |
| Scalp psoriasis | 7-8 | 5-6 | 6-9 | 4-6 | 16-18 | 12-14 |
| Arthropatic psoriasis | 9-12 | 7-8 | 14-16 | 12-14 | 30-36 | 28-32 |
| Psoriatic erythroderma | 14-16 | 12-14 | 14-16 | 12-14 | 34-40 | 30-38 |

Table number 3

Indicators of the effect of resveratrol supplementation on the external manifestations of various stages and forms of psoriasis with concomitant nutritional obesity of the I-II degree

| Name of pathology | Reduction of exudation, infiltration, peeling, day | |
|---|---|---|
| | I Group | II Group |
| Usual psoriasis | 7-8 | 4-6 |
| Scalp psoriasis | 7-8 | 5-6 |
| Arthropatic psoriasis | 9-12 | 7-8 |
| Psoriatic erythroderma | 14-16 | 12-14 |

Complications or side effects from treatment were not observed in both groups. In assessing the immediate results of treatment, we noticed that a decrease in the exudative component of the rash and the degree of severity of peeling in patients of group II occurred 3-5 days earlier than in patients of group I who received conventional treatment. Manifestations of progression with ordinary psoriasis (reduction or disappearance of itching, peeling, decrease in infiltration, growth of papules on the periphery) disappeared by 4-6 days from the start of treatment.

This was especially noticeable in patients with cases of ordinary psoriasis - 44 (56.4%) and psoriatic erythroderma-5 (6.4%). The stationary stage of psoriasis occurred earlier in patients of group II on 6.4 ± 0.5 days of treatment, compared with patients who received conventional treatment (8.2 ± 0.5 days). The term of the onset of complete clinical remission depended on the form of psoriasis and the duration of the last exacerbation, but it can be seen from table No. 2 that, in general, remission occurred 4-22 days earlier. The duration of remission in patients of group 2 was 1.8 times longer.

**Conclusions**

The results obtained allow us to draw a statistical conclusion that the result is in the zone of significance (temp = 6.2). In patients receiving complex therapy, namely a combination of traditional treatment regimens with resveratrol, the elimination of symptoms was more intense than in patients receiving standard therapy. Clinically, an accelerated decrease in infiltration, erythema and peeling, as well as a decrease in itching, were observed. Determining the severity of psoriatic lesions according to the PASI scale during the treatment of resveratrol revealed a consistent decrease in the number of points of this index in all patients. In the study of blood biochemical parameters after treatment, an improvement was noted, especially in patients of the second group, in addition to traditional complex treatment, yaks received resveratrol according to the scheme once a day for 30 days. Thus, given the research data, it is possible to assume that the complex treatment of psoriasis is more effective with the addition of resveratrol than traditional treatment regimens, encourages us to further study this technique.

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