

EVALUATION OF BLUEM ORAL CARE PRODUCTS EFFECTIVENESS IN COMPLEX PATIENT'S TREATMENT WITH CHRONIC GENERALIZED PERIODONTITIS OF I-II SEVERITY DEGREES

Diana Yakovleva¹

DOI: <https://doi.org/10.30525/978-9934-26-683-6-4>

In recent years, a high prevalence of major dental diseases has been seen in Ukraine, especially among young people. Periodontal diseases occur in 85% to 96%, according to various authors. The prevalence among young people varies between 79–94%, depending on the research methodology and the hygiene culture level [3, p. 5].

The number of bacteria in the oral cavity competes with the bacterial colonization of the gastrointestinal tract [5, p. 5–6]. The microbial flora in any case of periodontitis is diverse. It depends on the severity and phase of the disease.

Meanwhile, the gas composition of the periodontal pocket is close to anaerobic due to the low level of partial oxygen pressure (up to 2%). This initially promotes the development of the most pathogenic anaerobic microorganisms [5, p. 6].

The majority of drugs used in periodontology are remedies of etiotropic or symptomatic therapy. This is evidenced by the study of literature about periodontal diseases drug treatment. The most widely used preparations in dentistry are antimicrobial, anti-inflammatory drugs, and antiseptics. However, the using of these agents is often insufficient to obtain the desired clinical effect [4, p. 387].

The inventor of bluem technology, Peter Blijdorp, was a pioneer in the use of oxygen in dentistry. He was the authority in implantology, the developer of sinus lifting technology.

It is known that almost all disease processes can be explained by oxygen deficiency. If we look at the oxygen saturation (pO_2 value) of infected or damaged tissue, we will see that these values are much lower than in a healthy state. It is known that a wound heals more slowly under a plaster than when it is allowed to "dry heal."

The Bluem formula triggers the mechanism of controlled active oxygen delivery (H_2O_2) to the affected area through sodium perborate and enzymatic glucose oxidase, found in honey.

¹ Dental clinic "LightDent", Ukraine

Studies show that constant interaction with low-concentration hydrogen peroxide (0.003–0.015%) is much more effective in killing pathogenic bacteria than a short, one-time interaction with high-concentration hydrogen peroxide (1.5–3%).

At the same time, H₂O₂ breaks down into water (H₂O) and oxygen (O₂). Human body independently assesses the need for damaged cells and delivers water or oxygen to where they are needed.

The fluid is used for oral mucosa treatment (lichen planus), prevent and relieve of mucositis symptoms during and after chemotherapy.

The mouthwash accelerates tissue repair and regeneration after oral surgery. It can be used for daily care.

Dr. Celine, M. Levesque (University of Toronto, 2018) observed that bluem is particularly more effectiveness according to older and thicker biofilms (3-days-old), which are typically less susceptible to antimicrobial treatment than younger biofilms.

Dental foam is used for improvement of affected gums condition, clean dental prostheses, orthodontic appliances and caps. Moreover, it can be used by military personnel when the regular oral care is impossible. It removes plaque and food debris, freshens your breath. How to use: apply directly into the mouth with 2 strokes, wait at least 60 seconds. Do not swallow, do not rinse afterwards.

Bluem toothpaste is non-abrasive compared to other toothpastes. The dentin abrasion index RDA is less than 30. It is presented in two versions. Fluoride toothpaste contains 1000 ppm of calcium fluoride, which prevents teeth caries and hypersensitivity. The fluoride-free paste prevents titanium oxidation in implants and is designed specifically for people with implants.

All Bluem products have the unique taste and aroma. This is connected with the essential oil content, which is obtained from the leaves of *Gaultheria procumbens* (wintergreen) or *Betula lenta* (black birch). It is known for its characteristic sweet, minty odor, similar to menthol.

Objective – is to improve the effectiveness of complex patient's treatment with chronic generalized periodontitis of I-II severity stages with the Bluem gel addition, which is based on the slow release of oxygen.

Materials and methods. Forty patients of both sexes, aged between 25 and 50 with chronic generalized periodontitis of I-II severity degrees participated in the study. There were smokers and non-smokers. They were divided into two groups, a main group and a comparison group, with 20 people in each. At the time of examination concomitant pathology, which requiring medical treatment was non-detected in all patients.

The oral hygiene status was assessed before and after treatment (the simplified O'Leary plaque index, 1972, was determined). For this, the Mira-2-Ton dental plaque indicator was used. The papillary-marginal-alveolar index (PMA) and the bleeding index BOP (Ainamo, Bay, 1975) were determined in

order to assess clinical signs of periodontal tissue damage. Periodontal pocket probing was performed at 6 points near each tooth. Material was entered into the online program from UAP.

Treatment included professional hygiene and SRP (scaling and root plaining), with pocket irrigation during the procedure. Moreover, in the first group saline solution was used for irrigation, and 0,12% chlorhexidine solution was in the second. In the main group, Bluem gel was applied subgingivally, chlorhexidine-based gel Curasept ADS was used in the control group.

In addition, patients in the first group used Bluem products (toothpaste, mouthwash, foam) for oral care. Patients in the second group received toothpaste and mouthwash “Curasept ADS” respectively.

Repeat examination was performed after 8 weeks.

Results. All studied clinical parameters showed a trend of improvement from baseline and after 2 months. Patients noted the pleasant organoleptic properties of Bluem oral care products.

Before treatment, the average PI in patients of the main group was $56.20 \pm 2.96\%$, after treatment was $31.82 \pm 0.96\%$. PMA index before treatment was $64.12 \pm 2.66\%$, after treatment was $21.22 \pm 0.76\%$. The average BOP was $42.75 \pm 3.55\%$ and $18.65 \pm 2.45\%$, respectively, $p < 0.05$. Fig. 1.

Before treatment, the average PI in the control group was $50.70 \pm 1.10\%$, after treatment was $32.17 \pm 1.10\%$. PMA index was $63.29 \pm 2.25\%$ before treatment and $28.78 \pm 0.68\%$ after. The average BOP was $37.82 \pm 1.62\%$ and $13.70 \pm 0.79\%$, respectively, $p < 0.05$. Fig. 2.

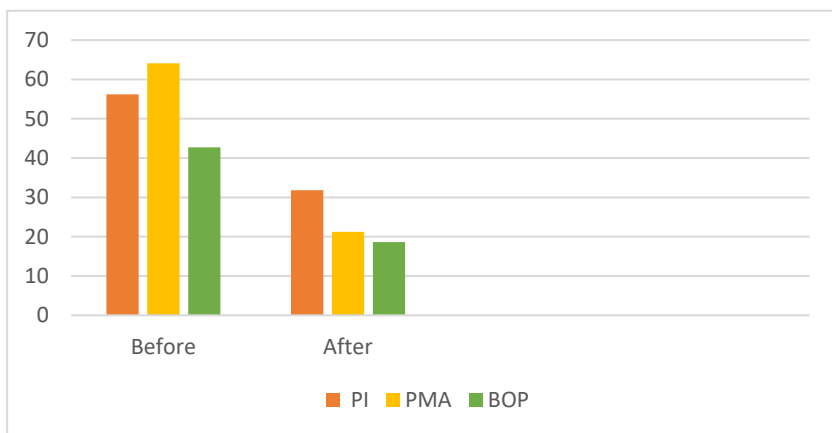


Fig. 1. Clinical data of patients in the main group before and after treatment

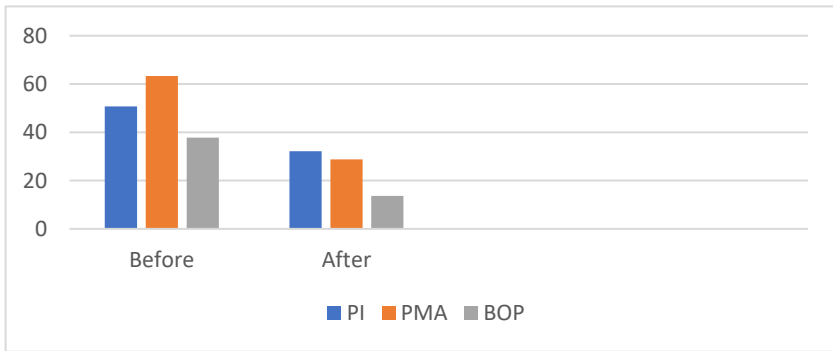


Fig. 2. Clinical data of control group patients before and after treatment

Conclusions. It was not found significant differences in treatment between the first and second groups. However, it should be noted some advantages of Bluem products compared to chlorhexidine. It's no allergic reactions, mild hemostatic and whitening effect due to hydrogen peroxide. Bluem does not disrupt the oral microbiome. It is suitable for long-term use and stimulates the wound healing process, in this study, it is reduction in periodontal pocket depth and formation of linear epithelial attachment. On the other hand, long-term use of chlorhexidine mouthwashes can increase blood pressure, promote enamel demineralization, and reduce the number of Veillonella bacteria. This antiseptic can selectively promote the growth of *Candida albicans*. This increases the risk of candidiasis, especially in immunocompromised patients. Chlorhexidine reduces microbial diversity in the mouth, affecting not only periodontal pathogens but also “good” bacteria.

Thus, active oxygen-based drugs use will significantly improve the quality of patient's treatment with periodontitis at the stages of primary and maintenance periodontal therapy.

References:

1. Petrushanko T. A., Skripnikov P. N., Litovchenko, I. Y., Kolomiets, S. V. Local treatment tactics of patients with chronic generalized periodontitis of I-II degrees. *Bulletin of problems in biology and medicine*. 2014, No 4(4), p. 351–353.
2. Remeziuk I.H., Avdeev O.V. Evaluation of the efficacy of chlorhexidine-based medications in patients with chronic generalized periodontitis. *Ukrainian dental almanac*. 2023, No 2, p. 5–9.
3. Sidelnikova L.F., Revenok B.A., Myalkovsky K.O. Hygiene and psychological aspects of the successful treatment of inflammatory periodontal diseases in young ages. *Preventive and pediatric dentistry*. 2016, No 2, p. 5–9.

4. Tkachenko I. M., Khilinich E. S., Pavlenkova O. V., Kovalenko V. V. Peculiarities of complex treatment of patients with chronic generalized periodontitis of the II and III degrees of gravity with the use of “Oral blue” preparation. *Bulletin of problems in biology and medicine*. 2017, No 2, p. 386–391.
5. Volynska T. B. "Basics of manual scaling". Kyiv: 2024, 104 p.