

MODERN TREATMENT OF PERIODONTITIS USING THE HELBO SYSTEM**Djuraeva Ferangiz Hakimovna**

Asia International University

djfera822@gmail.com<https://doi.org/10.5281/zenodo.20348762>**Annotation.**

Periodontitis remains one of the most significant problems in modern dentistry, as inflammatory processes in periodontal tissues often lead to bone destruction and tooth loss. Despite the development of endodontic treatment methods, complete elimination of infection from the root canal system remains difficult. Therefore, increasing attention has recently been paid to minimally invasive technologies capable of improving the quality of disinfection. One of these methods is photodynamic therapy using the HELBO system. This technology combines laser irradiation with a special photosensitizer, providing a pronounced antimicrobial effect. This article discusses the mechanism of HELBO therapy, its advantages, clinical effectiveness, and its role in the comprehensive treatment of periodontitis.

Keywords.

Periodontitis, HELBO, photodynamic therapy, laser dentistry, endodontics, antimicrobial therapy, dentistry

Introduction

Periodontitis is an inflammatory disease of the tissues surrounding the tooth root that develops as a result of infection penetrating the root canal system. Today, this pathology remains one of the most common reasons for patients seeking endodontic treatment.

The main difficulty in treating periodontitis is that even after thorough mechanical and chemical preparation, some microorganisms may remain in hard-to-reach areas of the root canal system. This is associated with the complex anatomical structure of the root canals, the presence of lateral branches, and dentinal tubules where bacteria continue to maintain the inflammatory process.

Modern dentistry is increasingly focused on methods that improve treatment effectiveness without additional tissue trauma. One of these approaches is photodynamic therapy implemented in the HELBO system. Today, this method is actively used as an additional stage in the treatment of periodontitis and demonstrates positive clinical outcomes.

Main Part**Principle of the HELBO System**

The HELBO method is based on photodynamic therapy, a modern technique for eliminating pathogenic microflora using laser light and a photosensitizer.

At the first stage, a special substance called a photosensitizer is introduced into the root canal or inflamed area. It selectively binds to bacterial cells and accumulates in the infection site. After that, laser irradiation with a specific wavelength is applied. Under the influence of light, a photochemical reaction begins, resulting in the formation of reactive oxygen species that destroy the cell walls of microorganisms.

An important advantage of this method is that its action is directed mainly toward pathogenic microflora, while surrounding healthy tissues remain practically unaffected.

The Role of HELBO Therapy in the Treatment of Periodontitis

The main cause of periodontitis is bacterial infection. Even modern instrumentation techniques cannot always completely eliminate microorganisms from the root canal system.

This is especially relevant in cases involving complex canal anatomy, chronic inflammation, or retreatment procedures.

HELBO therapy significantly improves the level of disinfection and reduces the amount of pathogenic microflora. The method is especially effective:

- in chronic periodontitis;
- during repeated endodontic treatment;
- in cases of complex and curved root canals;
- in the presence of resistant bacterial infection.

Photodynamic therapy is used not as an independent treatment method, but as an adjunct to traditional mechanical and chemical root canal preparation.

Stages of HELBO Therapy

The procedure is performed step by step and includes several stages.

First Stage — Mechanical Preparation of Root Canals

The dentist performs standard endodontic treatment by removing infected tissues, shaping, and irrigating the root canals.

Second Stage — Application of the Photosensitizer

A special HELBO gel or solution is introduced into the canal system. The substance binds to bacterial cells over a certain period of time.

Third Stage — Laser Activation

Using a laser tip, the photosensitizer is activated. At this stage, microorganisms are destroyed and the bacterial load is reduced.

Fourth Stage — Completion of Treatment

After additional disinfection, final preparation and obturation of the root canals are carried out.

Advantages of the HELBO Method

In recent years, photodynamic therapy has gained widespread use due to several important advantages.

The main benefits of the method include:

- pronounced antimicrobial effect;
- ability to act in hard-to-reach areas;
- minimal tissue trauma;
- reduction of inflammation;
- acceleration of healing processes;
- reduced risk of recurrence.

In addition, the method is well tolerated by patients and rarely causes complications. Another important advantage is the absence of bacterial resistance to photodynamic exposure.

Clinical Effectiveness

Modern studies show that the use of HELBO therapy in combination with conventional endodontic treatment improves clinical outcomes.

Patients demonstrate:

- reduction of pain symptoms;
- decrease in inflammatory processes;
- faster recovery of periapical tissues;
- lower risk of reinfection.

The best results are observed in the treatment of chronic forms of periodontitis, where standard root canal preparation alone may be insufficient.

Limitations of the Method

Despite its numerous advantages, HELBO therapy cannot completely replace conventional endodontic treatment. Without proper mechanical preparation of the root canals, achieving a successful result is impossible.

The limitations of the method include:

high cost of equipment;
 need for special training of the dentist;
 dependence of effectiveness on strict adherence to the treatment protocol.

In addition, some authors emphasize the need for further studies to evaluate the long-term effectiveness of the method.

Discussion

Modern dentistry aims to preserve tooth tissues as much as possible while reducing the invasiveness of treatment. In this regard, HELBO therapy meets the main requirements of contemporary medicine, as it improves disinfection effectiveness without aggressive effects on surrounding tissues.

Today, photodynamic therapy is actively being introduced into endodontic and periodontal practice. An increasing number of studies confirm its effectiveness as an additional stage in the treatment of periodontitis. The method is considered especially promising in chronic inflammatory processes and resistant bacterial infections.

Nevertheless, most specialists emphasize that HELBO therapy should be used as part of comprehensive treatment rather than as an independent alternative to conventional root canal preparation.

Conclusions.

HELBO therapy is a modern and promising method of additional disinfection in the treatment of periodontitis.

Photodynamic therapy provides effective elimination of pathogenic microflora.

The use of the HELBO system contributes to the reduction of inflammation and improvement of endodontic treatment outcomes.

The method is especially effective in chronic and complicated forms of periodontitis.

The highest effectiveness is achieved through a comprehensive treatment approach.

References.

1. **Feruza, K.** (2024). A brief overview of pragmatics: Language in context. American Journal of Philological Sciences, 4(3), 24-31
2. **Khajieva, F. M.** (2021). The rise and development of the american biographical novel. JournalNX, 7(06), 262-267.
3. **Melsovna, K. F.** (2021). Cosmopolitanism through intertextual devices in the postmodern biographical novel. ACADEMICIA: An International Multidisciplinary Research Journal, 11(11), 156-161.
4. **Feruza, K., & Shakhnoza, R.** (2024). Understanding postmodernism through the theories of lyotard and baudrillard. International Journal Of Literature And Languages, 4(3), 20-25.
5. **Khajieva, F., & Kendjaeva, G.** (2019). Study of stylistic lexicology. TEST Engineering and.
6. **Khajieva, F. M.** (2020). Theoretical aspects of the language learned (Stylistics). Бухоро: Дурдона.
7. **Melsovna, K. F., & Qizi, G. D. G.** (2023). EUPHEMISM IN ORIGINAL AND TRANSLATION (IN THE EXAMPLE OF JACK LONDON'S NOVEL MARTIN EDEN). International Journal Of Literature And Languages, 3(04).
8. **GENESIS, F. M. K.** (2020). DEVELOPMENT OF STYLISTIC DEVICES CLASSIFICATIONS. Филология масалалари. Ўзбекистон давлат жаҳон тиллари университети, (3-Б), 30-38.
9. **Khajieva, F.** (2020). Genesis and development of stylistic devices. Classifications. Philology Matters, 2020, 3.
10. **Khajieva, F. M.** (2019). Decoding of stylistic devices in Russian and English translations of the Uzbek novel "days gone by" by Abdulla Qadiri (stylistic correspondences and transformations). ISJ Theoretical & Applied Science, 04 (72), 541-545.

11. **Feruza, K.,** & Sevara, G. (2023). Stylistic Transformations In The English Translations Of A. Qodiriy's Novel "Days Gone By"[J]. International Journal Of Literature And Languages, 3(04), 63-69.
12. **Khajieva, F.,** & Rakhimova, S. (2023). EXPLORING LITERARY INNOVATIONS: A CLASSIFICATION OF FRAGMENTED FORMS IN BELLES-LETTRES TEXT. International Journal Of Literature And Languages, 3 (11), 47–53. <https://doi.org/10.37547/ijll/Volume03Issue11,7>.
13. **Melsovna, K. F.,** & Shukhratovna, S. P. (2025). EXPLORING THE USE OF SURREALISM IN FLASH FICTION: A DEEP DIVE INTO TARA CAMPBELL'S "YOU, COMMUTER". Recent scientific discoveries and methodological research, 2(1), 11-13.
14. **FERUZA, K.,** & SHAKHNOZA, R. (2025). A BRIEF OVERVIEW OF COLUM MCCANN'S WORKS AND PROSE STYLE. INTERNATIONAL JOURNAL, 5(2), 51-53.