

# Treatment Using the Method of Laser Therapy in Dentistry

**Orifkhujaeva Mekhriniso Valijonovna**

Trainee-teacher of the Department of Clinical Sciences, Faculty of Dentistry, Asian International University

---

**Received:** 2024, 15, Sep  
**Accepted:** 2024, 21, Sep  
**Published:** 2024, 09, Oct

Copyright © 2024 by author(s) and BioScience Academic Publishing. This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).



Open Access

<http://creativecommons.org/licenses/by/4.0/>

**Abstract:** Laser systems used for the treatment of caries affect the hard and soft tissues of the teeth. The ability to adjust the power and wavelength allows the installation to be used in different clinical situations. Laser radiation is absorbed and reflected by the tissues it affects. When using a laser to treat caries, the absorber is water. The effect carried out is absolutely safe for humans.

In order to cure caries, it is necessary: carefully treat, remove the decaying tooth tissues affected by bacteria, ensure the sterility of the treated surface and install a seal in place of the carious cavity.

**Key words:** Laser systems, caries, Periodontitis.

---

Lasers in dentistry are special medical devices that generate highly directional and monochromatic light radiation. Depending on the wavelength, lasers can penetrate various tissues of the oral cavity, including enamel, dentin, soft tissues and gums.

Laser radiation can interact with tissues in various ways, including evaporation, coagulation, ablation and biostimulation.

During evaporation, laser energy penetrates the tissues and causes them to heat up to the point of evaporation, which allows the removal of excess soft tissue.

Coagulation is the process of tissue coagulation using laser radiation. The light beam can burn small blood vessels, which allows you to control bleeding during operations or procedures.

Ablation is the removal of tissues using light radiation without heat exposure. The laser can effectively remove soft tissues.

Biostimulation is a process in which light radiation stimulates tissue regeneration and healing. It is useful in the treatment of wounds, ulcers and inflammatory processes. Laser therapy in dentistry can successfully solve a number of problems:

Periodontitis and gingivitis: laser therapy can help in the treatment of inflammatory gum diseases and the removal of bacteria that contribute to the development of periodontitis. Wounds and ulcers in the oral cavity: lasers promote the healing of wounds and ulcers, reducing the healing time and reducing pain.

Caries at the white spot stage is eliminated using ICON technology, which is performed without drilling and the use of anesthesia. The treatment of medium and deep caries requires the preparation and removal of carious tissues.

During the treatment of caries in some clinics, laser technology is used to disinfect the carious cavity and root canals after preparation. The procedure is performed using the tip of a laser installation, which acts on the tooth non-contact. The beam evaporates damaged tissues and does not affect healthy areas.

#### Disadvantages of laser caries treatment

The need for mandatory eye protection for the patient and medical staff during work (laser radiation can damage the retina). Special glasses are used for this purpose. However, protecting the eyesight, they make it difficult for the doctor to view the operating field.

The price for laser treatment of caries is quite high, which is due to the need to use expensive equipment.

To perform this procedure, the doctor must be specially trained. It also requires the expenses of the dental clinic and affects the cost of caries treatment with a laser.

The technique is effective only at the initial stages of carious lesions, a drill is still used to treat deep cavities. To date, indications for laser treatment have their own specifics, therefore, mandatory consultation of a specialist is required to prescribe such treatment.

#### The benefits of treating caries with a laser

The treatment of the enamel layer is absolutely painless, therefore, anesthesia is not needed for superficial caries.

Laser treatment of caries is indicated even for children. In addition, kids are not afraid of the laser, like drills. On the contrary, the device is more likely to interest the child.

When heated by a beam of dental tissues, bacteria are destroyed and blood vessels are sealed, so the risk of complications is minimized. During treatment, the patient does not feel any noise, vibration and feels quite comfortable. When treating caries with a laser, the doctor has the opportunity to adjust the power and depth of the beam. If dental burs can leave microcracks as a result of friction against dental tissues, then this does not happen when using a laser.

The laser is a special device that converts energy and releases a narrowly directed radiation stream.

There are several types of laser, but the most popular in dentistry are diode and erbium. With the help of a laser, many procedures can be performed more efficiently, efficiently and safely. The device is used in therapeutic, surgical dentistry, implantology, periodontics. Various types of lasers are used for dental treatment. Some of them are already considered obsolete, as they have been replaced by more modern and versatile systems. Diode and erbium lasers are most often used. The scope of their application is very wide, it depends on the parameters of the laser beam – the wavelength can be different. There are pulsed, continuous and combined modes of laser operation depending on the field of application.

#### Argon Laser

It is characterized by a wavelength from 488 to 514 nm, which coincides with the wavelength of polymerization lamps for setting composite seals. Therefore, such a laser can be used for sealing – and the curing rate of the material is much higher than when using a classical lamp. The laser beam is absorbed by hemoglobin and melanin and therefore, during surgical procedures, it can

stop bleeding.

#### Neodymium laser

It has a wavelength of 1064 nm, and was previously widely used in dentistry. But with the development of modern technologies, it has lost its relevance, it has been replaced by diode and erbium devices.

#### Helium-neon laser

It has a wavelength of 610-630 nm, which guarantees safety. The laser is most often used for physiotherapy procedures, as it penetrates well into soft tissues. It has a photostimulating effect.

#### Carbon Dioxide laser

The device has a wavelength of 10.6 microns, previously it was used in surgical practice. The laser radiation from the carbon dioxide apparatus is well absorbed by the hard tissues of the tooth. The laser has excellent surgical properties, but nowadays it is rarely used, since there is a risk of overheating (burning) of tissues when using it.

#### Diode (semiconductor) laser

One of the most popular lasers in dentistry is the diode laser, which has a wavelength of 792-1030 nm. The laser has an excellent hemostatic effect, has an anti-inflammatory effect, and stimulates regeneration. It is widely used for the treatment of teeth, root canals, gums, enamel whitening, as well as for surgical interventions.

Indications for the use of a diode laser:

caries and non-caries lesions of the teeth. The laser is used to remove damaged tissues, clean the tooth, and prepare for filling;

pulpitis, periodontitis. The device cleans the root canal system;

antiseptic treatment of carious cavities and root canal systems (for pulpitis, periodontitis);

gingivitis, periodontitis. The laser beam cleanses periodontal pockets, eliminates pathological microorganisms;

pericoronitis. It is used for excision of the mucous hood over the wisdom tooth;

enamel whitening. The laser beam activates the whitening gel on the surface of the teeth.

#### References

1. Farida Farkhodovna, K. ., Umida Rakhmatulloevna, N. ., & Mokhigul Abdurasulovna, B. (2022). ETIOLOGY OF CHRONIC RHINOSINUSITIS AND EFFECTIVENESS OF ETIOTROPIC TREATMENT METHODS (LITERATURE REVIEW). *Новости образования: исследование в XXI веке*, 1(4), 377–381. извлечено от <https://nauchniyimpuls.ru/index.php/noiv/article/view/1367>
2. Valijonovna, O. M. (2023). Aseptic and antiseptic in therapeutic dentistry. *Best Journal of Innovation in Science, Research and Development*, 2(10), 517-521.
3. Valijonovna, O. M., & Bahodirovna, N. M. (2023). TREATMENT OF HYPERESTHESIA AFTER TEETH WHITENING. *Научный Фокус*, 1(1), 459-465.
4. Valijonovna, O. M., & Bahodirovna, N. M. (2023). PREVENTION AND TREATMENT OF COMPLICATIONS AFTER WHITENING. *PEDAGOGICAL SCIENCES AND TEACHING METHODS*, 2(23), 216-218.
5. Valijonovna, O. M., & Bahodirovna, N. M. (2022). PREVENTION AND TREATMENT OF COMPLICATIONS AFTER WHITENING. *Scientific Impulse*, 1(4), 1201-1207.

6. Valijonovna, O. M. (2023). ROLE OF ICON TREATMENT IN MODERN DENTISTRY. *Best Journal of Innovation in Science, Research and Development*, 117-120.
7. Valijonovna, O. M. (2024). BASIC AND ADDITIONAL METHODS OF EXAMINATION OF DENTAL PATIENTS. *IMRAS*, 7(1), 322-327.
8. Орифходжаева, М. В. (2024). ФИЗИОТЕРАПЕВТИЧЕСКИЕ ПРОЦЕДУРЫ, ИСПОЛЬЗУЕМЫЕ В СТОМАТОЛОГИИ ДЛЯ ЛЕЧЕНИЯ ЗАБОЛЕВАНИЙ ПОЛОСТИ РТА. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, 39(5), 144-151.
9. Valijonovna, O. M. (2024). WORKERS OF INDUSTRIAL ENTERPRISES ORAL MUCOSA AND PREVENTION OF OCCUPATIONAL DISEASES IN DENTAL CAT DISCHARGE. *SCIENTIFIC APPROACH TO THE MODERN EDUCATION SYSTEM*, 2(22), 158-163.
10. Valijonovna, O. M. (2024). ORAL MUCOSAL INFLAMMATION AND PRIMARY TREATMENT METHODS CAUSED BY VARIOUS DUST PARTICLES IN PLANT AND FACTORY WORKERS. *TADQIQOTLAR*, 31(1), 188-194.
11. Valijonovna, O. M. (2024). TYPES OF OCCUPATIONAL DISEASES FOUND IN THE ORAL MUCOSA AND THEIR DESCRIPTION. *TADQIQOTLAR*, 31(1), 181-187.
12. Valijonovna, O. M. (2024). Dental Condition Trainees of Grain and Grain Products Combine Workers. *Research Journal of Trauma and Disability Studies*, 3(3), 284-288.
13. Valijonovna, O. M. (2024). Normal Microflora and Sanation of the Oral Cavity. *JOURNAL OF HEALTHCARE AND LIFE-SCIENCE RESEARCH*, 3(5), 302-306.
14. Valijonovna, O. M. (2024). MODERN METHODS USED IN THE PREVENTION OF CARIES. *EUROPEAN JOURNAL OF MODERN MEDICINE AND PRACTICE*, 4(4), 178-183.
15. Orifkhujaeva, M. V. (2024). Antiseptic and Disinfectants, Their Use in Dentistry. *Journal of Science in Medicine and Life*, 2(6), 159-165.
16. Numonova, A., & Narzulayeva, U. (2023). EPIDEMIOLOGY AND ETIOPATHOGENESIS OF CHF. *Наука и инновация*, 1(15), 115-119.
17. Орипова Озода Олимовна, Самиева Гулноза Уткуровна, Хамидова Фариди Муиновна, & Нарзулаева Умида Рахматуллаевна (2020). Состояние плотности распределения лимфоидных клеток слизистой оболочки гортани и проявления местного иммунитета при хроническом ларингите (анализ секционного материала). *Academy*, (4 (55)), 83-86.
18. Umida Rakhmatulloevna Narzulaeva, & Xamrayeva Muxlisa Farmon qizi. (2023). ETIOPATHOGENESIS OF HEMOLYTIC ANEMIA. *Web of Medicine: Journal of Medicine, Practice and Nursing*, 1(1), 1-4.  
Retrieved from <https://webofjournals.com/index.php/5/article/view/26>
19. Нарзулаева, У., Самиева, Г., & Насирова, Ш. (2023). Гемореологические нарушения на ранних стадиях гипертензии в жарком климате. *Журнал биомедицины и практики*, 1(1), 221-225. <https://doi.org/10.26739/2181-9300-2021-1-31>
20. Umida Rakhmatulloevna Narzulaeva. (2023). Important Aspects of Etiology And Pathogenesis of Hemolytic Anemias. *American Journal of Pediatric Medicine and Health Sciences* (2993-2149), 1(7), 179-182. Retrieved from <https://grnjournal.us/index.php/AJPMHS/article/view/817>
21. Нарзулаева, У. Р., Самиева, Г. У., & Насирова, Ш. Ш. (2021). ИССИҚ ИҚЛИМДА КЕЧУВЧИ ГИПЕРТОНИЯ КАСАЛЛИГИНИНГ БОШЛАНҒИЧ БОСҚИЧЛАРИДА ГЕМОРЕОЛОГИК БУЗИЛИШЛАР. *ЖУРНАЛ БИОМЕДИЦИНЫ И ПРАКТИКИ*, 6(1).

22. Нарзулаева, У. Самиева, Г., Лапасова, З., & Таирова, С. (2023). Значение диеты в лечении артериальной гипертензии. *Журнал биомедицины и практики*, 1(3/2), 111–116. <https://doi.org/10.26739/2181-9300-2021-3-98>
23. Xalimova, Y. S. (2024). Morphology of the Testes in the Detection of Infertility. *Journal of Science in Medicine and Life*, 2(6), 83-88.
24. Халимова, Ю. С. (2024). Морфологические Особенности Поражения Печени У Пациентов С Синдромом Мэллори-Вейса. *Journal of Science in Medicine and Life*, 2(6), 166-172.
25. Salokhiddinovna, X. Y. (2023). Anemia of Chronic Diseases. *Research Journal of Trauma and Disability Studies*, 2(12), 364-372.
26. Salokhiddinovna, X. Y. (2023). MALLORY WEISS SYNDROME IN DIFFUSE LIVER LESIONS. *Journal of Science in Medicine and Life*, 1(4), 11-15.
27. Salokhiddinovna, X. Y. (2023). SURUNKALI KASALLIKLARDA UCHRAYDIGAN ANEMIYALAR MORFO-FUNKSIONAL XUSUSIYATLARI. *Ta'lim innovatsiyasi va integratsiyasi*, 10(3), 180-188.
28. Saloxiddinovna, X. Y. (2024). CLINICAL AND MORPHOLOGICAL ASPECTS OF AUTOIMMUNE THYROIDITIS. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, 36(5), 100-108.
29. Saloxiddinovna, X. Y. (2024). MORPHOFUNCTIONAL FEATURES BLOOD MORPHOLOGY IN AGE-RELATED CHANGES. *Лучшие интеллектуальные исследования*, 14(4), 146-158.
30. Saloxiddinovna, X. Y. (2024). CLINICAL MORPHOLOGICAL CRITERIA OF LEUKOCYTES. *Лучшие интеллектуальные исследования*, 14(4), 159-167.
31. Saloxiddinovna, X. Y. (2024). Current Views of Vitamin D Metabolism in the Body. *Best Journal of Innovation in Science, Research and Development*, 3(3), 235-243.
32. Saloxiddinovna, X. Y. (2024). MORPHOFUNCTIONAL FEATURES OF THE STRUCTURE AND DEVELOPMENT OF THE OVARIES. *EUROPEAN JOURNAL OF MODERN MEDICINE AND PRACTICE*, 4(4), 220-227.
33. Saloxiddinovna, X. Y. (2024). Modern Views on the Effects of the Use of Cholecalciferol on the General Condition of the Bod. *JOURNAL OF HEALTHCARE AND LIFE-SCIENCE RESEARCH*, 3(5), 79-85.
34. Abdurashitovich, Z. F. (2024). APPLICATION OF MYOCARDIAL CYTOPROTECTORS IN ISCHEMIC HEART DISEASES. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, 39(5), 152-159.
35. Abdurashitovich, Z. F. (2024). ASTRAGAL O'SIMLIGINING TIBBIYOTDAGI MUHIM ANAMIYATLARI VA SOG'LOM TURMUSH TARZIGA TA'SIRI. *Лучшие интеллектуальные исследования*, 14(4), 111-119.
36. Abdurashitovich, Z. F. (2024). MORPHO-FUNCTIONAL ASPECTS OF THE DEEP VEINS OF THE HUMAN BRAIN. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, 36(6), 203-206.
37. Abdurashitovich, Z. F. (2024). THE RELATIONSHIP OF STRESS FACTORS AND THYMUS. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, 36(6), 188-196.

38. Abdurashitovich, Z. F. (2024). MIOKARD INFARKTI UCHUN XAVF OMILLARINING AHAMIYATINI ANIQLASH. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, 36(5), 83-89.
39. Rakhmatova, D. B., & Zikrillaev, F. A. (2022). DETERMINE THE VALUE OF RISK FACTORS FOR MYOCARDIAL INFARCTION. *FAN, TA'LIM, MADANIYAT VA INNOVATSIYA JURNALI/ JOURNAL OF SCIENCE, EDUCATION, CULTURE AND INNOVATION*, 1(4), 23-28.
40. Toxirovna, E. G. (2024). QANDLI DIABET 2-TIP VA KOMORBID KASALLIKLARI BO'LGAN BEMORLARDA GLIKEMIK NAZORAT. *TADQIQOTLAR. UZ*, 40(3), 48-54.
41. Toxirovna, E. G. (2024). XOMILADORLIKDA QANDLI DIABET KELTIRIB CHIQRUVCHI XAVF OMILLARINI ERTA ANIQLASH USULLARI. *TADQIQOTLAR. UZ*, 40(3), 63-70.
42. Toxirovna, E. G. (2024). DETERMINATION AND STUDY OF GLYCEMIA IN PATIENTS WITH TYPE 2 DIABETES MELLITUS WITH COMORBID DISEASES. *TADQIQOTLAR. UZ*, 40(3), 71-77.
43. Tokhirovna, E. G. (2024). COEXISTENCE OF CARDIOVASCULAR DISEASES IN PATIENTS WITH TYPE 2 DIABETES. *TADQIQOTLAR. UZ*, 40(3), 55-62.
44. Toxirovna, E. G. (2024). GIPERPROLAKTINEMIYA KLINIK BELGILARI VA BEPUSHTLIKKA SABAB BO'LUVCHI OMILLAR. *Лучшие интеллектуальные исследования*, 14(4), 168-175.
45. Tokhirovna, E. G. (2024). MECHANISM OF ACTION OF METFORMIN (BIGUANIDE) IN TYPE 2 DIABETES. *JOURNAL OF HEALTHCARE AND LIFE-SCIENCE RESEARCH*, 3(5), 210-216.
46. Tokhirovna, E. G. (2024). THE ROLE OF METFORMIN (GLIFORMIN) IN THE TREATMENT OF PATIENTS WITH TYPE 2 DIABETES MELLITUS. *EUROPEAN JOURNAL OF MODERN MEDICINE AND PRACTICE*, 4(4), 171-177.
47. Qilichovna, A. M., & Nematilloevna, X. M. (2024). METABOLIK SINDROMI VA QON BOSIMI BOR BEMORLARDA O'ZGARISH XUSUSIYATLARI BAHOLASH: Yangi O'zbekiston taraqqiyotida tadqiqotlarni o'rni va rivojlanish omillari. *Yangi O'zbekiston taraqqiyotida tadqiqotlarni o'rni va rivojlanish omillari*, 6(4), 187-196.
48. Qilichovna, A. M., & Nematilloevna, X. M. (2024). TIBBIYOT TILI HISOBLANMISH LOTIN TILINI SAMARALI O'RGANISH OMILLARI: Yangi O'zbekiston taraqqiyotida tadqiqotlarni o'rni va rivojlanish omillari. *Yangi O'zbekiston taraqqiyotida tadqiqotlarni o'rni va rivojlanish omillari*, 6(4), 197-206.
49. Tog'aydullayeva, D. D. (2024). Embrional Davrda Gemopoez Va Unda Jigar Va Taloqning Roli. *Journal of Science in Medicine and Life*, 2(6), 132-134.
50. Tog'aydullayeva, D. D. (2024). Occurrence of Combination Diseases in Ischemic Heart Disease and Metabolic Syndrome and their Diagnosis. *Journal of Science in Medicine and Life*, 2(6), 126-131.