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LASER HAIR REMOVAL: DIODE LASER

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Annotation

Laser hair removal is one of the fastest growing procedures in cosmetic dermatology. Excess hair growth ranges in severity and may present as hypertrichosis (excess hair growth in any body site) or hirsutism (abnormal hair growth in women in androgen dependent sites). Many methods are available to remove unwanted hair, including bleaching, plucking, shaving, waxing, chemical depilators, and electrolysis. However, these procedures can produce unwanted side effects such as irritation and cutaneous infection. Laser hair removal provides easy, painless, and long-term hair reduction. No wonder it has been appropriately called “the next big thing in cosmetic dermatology”.

Keywords: diode laser, photothermolysis, chromophore, melanin, photochemical, selective photothermolysis

Diode laser is an electrically pumped semiconductor laser in which the active medium is formed by a PN junction of a semiconductor diode. The new diode lasers have an inbuilt cooling device. The nozzle of the device’s handpiece incorporates a sapphire chill window technology through which a coolant is in constant circulation; therefore, there is no need for other cooling methods.

Laser hair removal is based on the theory of selective photothermolysis, which states that utilizing an appropriate wavelength of light targeted at a specific chromophore which absorbed and transformed the energy into heat that is capable of damaging the surrounding tissues. Melanin acts as the chromophore for targeting hair follicles; the lasers or light sources that are used for hair removal lie within the optical window of the electromagnetic spectrum where absorption by melanin and deep penetration into the dermis are combined. Within the 600–1,100 nm region, deep and selective heating of the hair shaft, hair follicle epithelium, and hair matrix is possible, while

selective cooling of the epidermis minimizes epidermal injury and damage to epidermal melanin.

Appropriate selection of wavelength, pulse duration, fluence, and spot size are important in optimizing the hair removal while minimizing any potential side effects Light can also destroy hair follicles by two more mechanisms such as 1) mechanical (via shock waves or violent cavitation) and 2) photochemical through generation of toxic mediators, like singlet oxygen or free radicals.

All in all, diode lasers are solid state laser devices that have been used successfully over the past several years. Because of their reliability and their ability to penetrate into the much deeper part of the skin, even darker skin individuals are successfully treated for the epilation of unwanted hair. Clinical studies using diode lasers have shown their effectiveness in permanent (long-term hair removal) and have had minimal adverse effects. Long-pulsed diode lasers ranges from 800 to 810 nm.

References:

1. Хошимова, А. Ё. (2018). ВЛИЯНИЕ ЗАГРЯЗНЕНИЯ ОКРУЖАЮЩЕЙ СРЕДЫ НА ЗАБОЛЕВАЕМОСТЬ БРОНХИАЛЬНОЙ АСТМОЙ. Актуальные вопросы современной пульмонологии. Ма, 200.
2. Habibullayevna, A. G., & Shavkatjon o'g'li, Q. S. (2025, February). STRUCTURE AND INTRACELLULAR ACTIVITY OF THE DNA-CONTAINING HERPES SIMPLEX VIRUS. In International Educators Conference (pp. 126-132).
3. INTER, F. L. I. An International Multidisciplinary Research Journal. An International Multidisciplinary Research Journal, 41(43).
4. Мухидинова, Ш. Б. (2016). ЭПИДЕМИОЛОГИЧЕСКИЕ ОСОБЕННОСТИ ТУБЕРКУЛЕЗА. Актуальные вопросы современной пульмонологии. Ма, 144.
5. Каландарова, М. Х. (2024). ФИЗИОЛОГИЧЕСКИЕ ОСНОВЫ РАЦИОНАЛЬНОГО ПИТАНИЯ. Eurasian Journal of Medical and Natural Sciences, 4(1-1), 235-240.

6. Khodzhiakbarovna, K. M. (2023). IMPORTANCE OF FOLK MEDICINE IN THE TREATMENT OF DISEASES. JOURNAL OF MEDICINE AND PHARMACY, 7(1), 1-5.
7. Rapikov, I. (2023). Formation of savings and entrepreneurship on the basis of labor education according to age characteristics in primary school students. Procedia of Engineering and Medical Sciences, 8(12), 80-83.
8. Tohirbek To'lqinjon o'g, S. (2024). Successful testicular sperm extraction in an infertile man with non-obstructive azoospermia and hypergonadotropic hypogonadism presenting with bilateral atrophic testis: a case report. Miasto Przyszłości, 48, 186-188.
9. Uzbekistan, O. F. To verify Questionnaire of the "Uzbek Index of Premature Ejaculation".
10. Pattoyevich, G. A. (2025, February). PRIMARY INSTRUMENTAL EXAMINATION IN THE ANOMALY OF PULMONARY ATRESIA WITH INTACT VENTRICULAR SEPTUM. In International Educators Conference (pp. 148-154).
11. Pattoyevich, G. A., & Nilufar, M. (2025, January). CHILDREN'S ECZEMA AND RECOMMENDATIONS FOR ITS TREATMENT. In International Conference on Multidisciplinary Sciences and Educational Practices (pp. 56-62).
12. Umarovich, B. M., & Bahodir o'g'li, U. B. (2025, February). CLINICAL AND LABORATORY CHARACTERISTICS OF CHRONIC VIRAL HEPATITIS" B" AND" C" IN HIV-INFECTED INDIVIDUALS. In International Educators Conference (pp. 144-147).
13. Шухратжон у'г'ли, СЭ (2025, январь). РАСПРОСТРАНЕННОСТЬ И ЭТИОЛОГИЯ ГИПОСПАДИИ. На Международной конференции по междисциплинарным наукам и образовательной практике (стр. 99-104).
14. Qodirova, G. A., & Ibrohimova, M. (2025, February). TREATMENT METHODS AND COMPLICATIONS OF SCARLET FEVER. In International Educators Conference (pp. 175-181).
15. Каримова, М. М. (2019). ЙОД БИЛАН ТАЪМИНЛАНГАНЛИК ВА ЙОД ТАНҚИСЛИГИ ШАРОИТИДА ТУГУНЛИ БУҚОҚНИНГ ШАКЛЛАРИ

КЎРИНИШЛАРИ БЎЙИЧА БАЖАРИЛГАН ЖАРРОҲЛИК ОПЕРАЦИЯЛАР СОНИ ВА ҲАЖМИНИНГ ДИНАМИК ЎЗГАРИШЛАРИ. Журнал. Доктор Ахборотномаси. Самарканд, (1), 57-61.

16. Каримова, М. М. (2020). ИССЛЕДОВАНИЕ ВЛИЯНИЯ БИОКОМПЛЕКСОВ НА ПЕРЕКИСНОЕ ОКИСЛЕНИЕ ЛИПИДОВ ИЗОЛИРОВАННЫХ ГЕПАТОЦИТОВ. Новый день в медицине, (1), 498-500.
17. Каримова, М. М. (2020). ВЛИЯНИЕ ПАНДЕМИИ НОВОЙ КОРОНАВИРУСНОЙ ИНФЕКЦИИ НА ДЕЯТЕЛЬНОСТЬ ТАМОЖЕННЫХ ОРГАНОВ. In Взаимодействие таможенных органов с иными участниками таможенных отношений: особенности и перспективы развития (pp. 136-140).
18. Шамансурова, З. М., & Каримова, М. М. ИЗУЧЕНИЕ ВЛИЯНИЯ ИНФЕКЦИИ COVID-19 НА СОСТОЯНИЕ ТКАНИ ЩИТОВИДНОЙ ЖЕЛЕЗЫ.
19. Каримова, М. М., Мухамадсодиқов, М. М., & Абдулазихожиева, Р. Б. (2022). Қалқонсимон Без Саратонини Замонавий Ташхислаш, Даволаш Ва Текширув Усулларини Баҳолаш. AMALIY VA TIBBIYOT FANLARI ILMIY JURNALI, 1(6), 84-95.
20. Husanboy, U. (2025, January). ACUTE HEMORRHAGIC CYSTITIS DISEASE IN CHILDREN AND ITS DEVELOPMENT IN THE CHILD'S DODY. In International Conference on Multidisciplinary Sciences and Educational Practices (pp. 88-94).
21. Masrurjon o'g'li, M. M. (2024, May). HUMAN GROWTH HORMONE. In Proceedings of Scientific Conference on Multidisciplinary Studies (Vol. 3, No. 5, pp. 117-125).
22. Masrurjon o'g'li, M. M. (2024). COMMON THYROID DISEAGES, CAUSES AND ITS TREATMENT METHODS. Miasto Przyszłości, 48, 223-232.
23. Шамансурова, З. М., & Каримова, М. М. ИЗУЧЕНИЕ ВЛИЯНИЯ ИНФЕКЦИИ COVID-19 НА СОСТОЯНИЕ ТКАНИ ЩИТОВИДНОЙ ЖЕЛЕЗЫ.