AMERICAN ACADEMIC PUBLISHER

INTERNATIONAL JOURNAL OF MEDICAL SCIENCES

ISSN NUMBER: 2692 - 5206 Volume 6. No 03. March ,2026

PROSPECTS FOR THE USE OF ANESTHETICS AND MODERN ANESTHETICS USED IN DENTAL PRACTICE

Tolmas Khamroev Tolibovich
Fotima Allayarova Dilmurodovna
Jasmina Artikova Olimjon qizi
Komila Khadzhimetova Ulug'bek qizi
Abdurakhim Mirakhmedov Khislat o'g'li
Saidolim Salimov Halimjon o'g'li
Shokhzhakhon Egamurodov Olim o'g'li
Department of pharmacology of Tashkent State Medical University
Student of group 302A of the 1st Faculty of Dentistry of Tashkent State Medical University
Student of group 303B of the 1st Faculty of Dentistry of Tashkent State Medical University
Student of group 304A of the 1st Faculty of Dentistry of Tashkent State Medical University
Student of group 304B of the 1st Faculty of Dentistry of Tashkent State Medical University
e-mail: tolmas4th@mail.ru

Abstract. In dentistry, topical anesthetic is frequently utilized. Its clinical efficacy is still debatable, though. In order to determine the most researched medications, research trends, top authors, geographic distribution, funding sources, and study characteristics, this study performed a bibliometric analysis of the most cited clinical dentistry articles on topical anesthesia. In recent years, articaine has gained popularity in clinics as a novel medication for local dental anesthetic. The invention of articaine, its mechanism of action, comparison of its effectiveness with other widely used local anesthetics in dental treatment, and an overview of its use in specific populations are all included in this article. Research will continue to look for new and efficient pain management methods even if local anesthetics remain the cornerstone of pain treatment in dentistry. Enhancing anesthetic drugs, delivery systems, and associated techniques is the main focus of research efforts. Recent technological advancements can help the dentist provide greater pain treatment with fewer uncomfortable injections and fewer side effects. The goal of the current literature study is to gather data that will persuade dentists to use contemporary local anesthetics in addition to other strategies and tactics to lessen patient discomfort during anesthesia administration. In conclusion, articaine is more anesthetically effective than lidocaine in clinical dental therapy, and there is no statistically significant difference between the two drugs' safety. Specifically, articaine can be used flexibly for clinical application and provides a number of benefits. In the foreseeable future, atecaine has enormous potential for widespread use in dental offices.

Keywords. Recent developments, local anesthetic, pain management, bibliometrics, topical anesthesia, local anesthetics, dentistry, clinical trials, dental anesthesia.

Introduction. In dental clinics, local anesthetics are the primary tool used to manage pain. An effective anesthetic can lessen discomfort and agony, increase patient cooperation, and lessen anxiety. Nowadays, dental offices utilize articaine as an anesthetic. In 1969, articaine was first synthesized and given the name carticaine. The first clinical experiment was carried out in Germany in 1971 by Winther and Nathalang. In Canada, the term "articaine" replaced "carticaine" in 1984. A 4% articaine with 1:200,000 adrenaline solution was authorized for clinical use by the US Food and Drug Administration (FDA) in 2006. In clinical practice

AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES
ISSN NUMBER: 2692 - 5206 Volume 6. No 03. March ,2026

nowadays, 4% articaine plus 1:100,000 or 1:200,000 adrenaline solutions are frequently utilized. Since typical anesthetic treatments and solutions do not allow dentists to fully overcome the pain patients experience during root canal treatment of teeth with incurable pulpitis, managing dental pain during root canal therapy requires specific care. As a result, patients experience a great deal of anxiety during root canal therapy. According to a survey of dental patients, anxiety, difficulties achieving anesthesia, fear of pain, and dread of needles are the main causes of fear in patients, which may compel them to request sedation during treatment. From the perspective of the patient, a successful anesthesia technique is one in which there is little to no discomfort during the insertion of the needle, the injection of the anesthetic solution, and the course of treatment. Modern dentistry could not exist without the use of local anesthetics [1-6]. The dentist has a range of instruments and methods at his disposal to achieve local anesthesia. However, it is paradoxical that although local anesthetics allow dental treatments to be performed painlessly, they also cause the greatest amount of discomfort and anxiety in patients. Effective and safe pain treatment is essential in today's dental practice. Our current tools for applying local anesthetic solutions to the maxilla and mandible are adequate for most clinical situations. Local anesthetics are used for invasive dental operations such as scaling and root planing, cavity preparation, tooth preparation, surgery, or critical pulp therapy. Depending on the patient's level of anxiety or pain tolerance, local anesthetics are used for nearly all dental treatments except for examination, oral prophylaxis, and fluoride application. The use of various anesthetic gels, distraction techniques, warming the anesthetic agents, slowing down the injection speed, and buffering local anesthetic agents are some of the methods that have been proposed to lessen pain during the administration of local anesthetic agents [7-13]. To explain the causes of anesthesia failure and the variables that could influence anaesthesia success rates, a number of theories and variables pertaining to local anaesthesia in dentistry have been proposed. Nevertheless, none of these hypotheses fully explain why anesthesia fails, nor do they suggest a method or drug to administer anesthesia to every tooth that requires root canal therapy. Safe and effective pain treatment is essential in today's dental practice. Our current tools for applying local anesthetic solutions to the mandible and maxilla are adequate for most clinical situations. Local anesthetics are used for invasive dental operations such as scaling and root planing, cavity preparation, tooth preparation, surgery, or critical pulp therapy. Depending on the patient's pain threshold or degree of anxiety, local anesthetics are used for nearly all dental treatments except examinations, oral prophylaxis, and fluoride application [14-19]. As a result, it is imperative that all dental professionals understand the limitations, causes of anesthesia failures, factors that could influence anesthesia success rates, and suggested strategies (i.e., methods, anesthetic solutions, premedication, and techniques) for handling anesthesia failure. In order to help researchers plan, carry out, and report their studies with a lower risk of bias, this review sought to clarify the causes of anesthesia failures, factors that may influence anaesthesia success rate, and the limitations of earlier studies. The use of various anesthetic gels, distraction techniques, warming the anesthetic agents, slowing down the injection speed, and buffering local anesthetic agents are some of the methods that have been proposed to lessen pain during the administration of local anesthetic agents. The goal of the current literature study is to gather reliable information for dentists regarding the use of contemporary local anesthetics, alternative methods, and strategies to reduce pain during anesthesia administration, thus improving patient comfort [20-25].

The main purpose of this brief review is to analyze the prospects for the use of anesthetics and modern anesthetics in dental practice based on reputable scientific papers.

Anaesthesia success criteria. The success criteria for anesthesia should be separated into two groups: pulp anesthesia success criteria and anesthesia technique success criteria. Soft tissue

AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES
ISSN NUMBER: 2692 - 5206 Volume 6. No 03. March ,2026

numbness has historically been used to assess the success of most anesthesia procedures. For example, lower lip numbness after an inferior alveolar nerve block (IANB) has been regarded as an indication of IANB success. Crossover investigations have shown that in teeth without permanent pulpitis, no reaction to pulp sensibility tests has been interpreted as a sign of pulp anesthesia. When preparing an access cavity for a tooth with irreversible pulpitis, the best way to gauge the success of anesthesia is usually if there is little to no discomfort. Soft tissue numbness is regarded by most patients as a sign of successful anesthesia. For example, soft tissue numbness may not always be noticeable after infiltration injections for maxillary second molars, and the patient may believe that the anesthesia was unsuccessful [4-11]. Dental professionals would be better served by taking into account scientifically supported criteria for anesthesia success. Then, rather than soft tissue numbness, a failure to respond to the cold test would be a more accurate indicator of anesthesia success. Randomized clinical trials in patients with irreversible pulpitis or crossover design studies including volunteers with sound, intact teeth have been used to study the success rate of anesthesia. When a subject undergoing anesthesia does not react to a cold test or two consecutive maximum outputs of an electric pulp test (EPT), the anesthesia is considered successful in crossover studies. However, neither lip numbness nor a lack of reaction to cold or EPT ensures that anesthesia will be successful during access cavity preparation, pulp exposure, or root canal instrumentation in randomized clinical trials of teeth with irreversible pulpitis. In conclusion, randomized clinical trials including teeth with irreversible pulpitis yield more accurate results than crossover studies involving teeth with healthy pulps since these teeth are more challenging to anesthetize during root canal therapy. Thus, crossover studies and teeth with irreversible pulpitis should be evaluated independently in systematic reviews and meta-analyses of the effects of anesthetic solutions or procedures [21-32].

Anaesthesia failure reasons. The failure of local anesthesia during root canal therapy has been explained for a number of reasons. These explanations fall into two categories: anatomic and non-anatomic. The mylohyoid nerve and the central core idea have garnered increased attention among the anatomical explanations. Non-anatomic causes, however, have garnered increasing attention because they may account for anesthetic failures for most teeth with permanent pulpitis, as there is no sufficient explanation for anesthesia failure for all teeth. The majority of theories concerning anesthesia failure have focused on changes in the nerves, such as lowering the threshold, the expression of sodium channels resistant to tetrodotoxin, and the presence of voltage-gated sodium channel isoforms in the nerve endings of Na_v 1.7 and Na_v 1.8 in exited nerve fibers. Since the percentage of the base form of the solution that may successfully penetrate the nerve perineurium would be reduced in inflamed tissues due to a lower pH, the state of the nerves surrounding tissues may also have an impact on the anesthetic solution's effectiveness [23-30]. A nerve block injection that delivers the anesthetic solution to a location far from the inflammatory tissue does not work, despite the fact that the theory of an acidic environment may be a plausible explanation for the failure of infiltration injections. The expression of ion channels, proinflammatory cytokines, and prostaglandins at a location far from the site of inflammation—the subnucleus caudalis and trigeminal ganglion—has been shown to be impacted by pulp inflammation. In conclusion, one of the causes of anesthesia failure should be attributed to modifications in higher levels of nerve pathways (such the trigeminal subnucleus caudalis) in addition to localized changes in nerve fibers. Any theory that just explains local causes of pulp anesthesia failure cannot be regarded as thorough. The foundation of pain treatment techniques should be the consideration of nerve modification via the neural routes to the higher level neurons (e.g., the trigeminal subnucleus caudalis) [11-18].

AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES
ISSN NUMBER: 2692 - 5206 Volume 6. No 03. March ,2026

Factors that may influence intraoperative pain. Anaesthesia failure, which is defined as moderate-to-severe discomfort during root canal therapy, has been found to occur between 11% and 85% of the time. Numerous factors have been thought to influence anesthesia success rates, but research on their effects has produced mixed findings. The presence of irreversible pulpitis with acute apical periodontitis, preoperative pain, mandibular teeth, longer palatal and disto-buccal roots in maxillary molars, posterior teeth, especially molars, patients under 35 years of age, and treatment procedures lasting more than 45 minutes have all been identified as potential predictors. Additionally, when premolar teeth are being anesthetized, gender (females) might be a predictor. Regarding some of the factors, such age and gender, these research haven't been entirely consistent. In conclusion, it is widely acknowledged that the most reliable indicators of anesthesia failure are the existence of preoperative discomfort and mandibular posterior teeth [5-12].

Side effects and complications after injection. Despite being uncommon, a number of adverse effects have been documented after using different kinds of anesthetic solutions. Common adverse effects of local anesthetic solutions include paraesthesia, methemoglobinemia, cardiac and central nervous system toxicity, oedema, haematoma, dizziness, nausea, allergies, and shock. Each of these, however, carries a different risk. In clinical trials, it is crucial that any side effects and problems of any drugs, methods, or interventions be documented. The failure to mention complications after using anesthetic solutions, methods, and premedication was one of the flaws in earlier studies that were published. Future research ought to concentrate more on these topics. Initial discomfort, intraoral bruising, and mild swelling at the injection site were the most common side effects of using anesthetic solutions as buccal infiltrations for posterior mandibular teeth. With bupivacaine, paresthesia and toxicity to the heart and central nervous system have been more common. Concerns have been raised about the potential side effects of using articaine and prilocaine instead of lidocaine as anesthetic solutions in dentistry. Two systematic reviews and meta-analyses, in contrast to these reports, found no discernible difference in side effects between 4% articaine and 2% lidocaine [18-28].

Significant developments and fresh avenues for research on anesthesia success rates. The distinction between professional and scientific perspectives on anesthesia success is a crucial factor in determining whether an anesthesia procedure is successful or not. Generally speaking, moderate pain or pain measuring more than 54 mm on the Heft-Parker VAS during any access cavity preparation stage has been regarded as anesthesia failure. However, as a practitioner, it would be successful when an intra-pulp injection is given and a supplemental injection, like a PDL injection, helps to alleviate the pain during dentine penetration. Understanding that patients want their treatments to be as painless as possible is a crucial topic in dentistry. From the perspective of a practitioner, any safe technique that enables patients experience little to no discomfort during a root canal operation would be highly appreciated. As a result, it is essential to choose and administer treatment modalities that have greater success rates, are safe, and lessen pain and discomfort both before and after the procedure [5-11]. The fact that it is frequently unclear whether buccal infiltration injections are utilized as primary or auxiliary techniques is one of the confounding aspects of these procedures. Supplementary injections have been used in a number of studies as rescue injections when the patient complained of pain during access cavity preparation or root canal instrumentation but the initial injection or injections produced signs of successful anesthesia (such as soft tissue numbness and no response to pulp sensibility tests). However, prior to starting access cavity preparation, several investigations have employed a buccal infiltration using the IANB approach. Any anesthetic injection other than the IANB was regarded by the researchers as supplemental in experiments using the latter method,

AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES
ISSN NUMBER: 2692 - 5206 Volume 6. No 03. March ,2026

even though it was the principal procedure. To prevent readers from becoming confused when primary and supplemental injections are used in future research, it is crucial to define these terminology. Since buccal infiltration has been demonstrated to be a helpful strategy to improve anesthesia success and dentists should take every precaution to minimize pain during root canal therapy, it should be regarded as a primary technique and should not be reserved for use in the event of IANB failure. In order to alleviate pain and discomfort during access cavity preparation and root canal instrumentation, the authors of this research propose that supplemental injections be used when the basic procedures fail. To reduce the danger of bias, it is crucial that future research use accurate methods, materials, and reporting information [21-29].

Discussion. Dentistry makes extensive use of topical anesthetic. Its therapeutic efficacy is still up for debate, though. The most referenced clinical dentistry publications on topical anesthesia were bibliometrically analyzed in this study to determine the most researched medications, research trends, top authors, geographic distribution, funding sources, and study features. Using specified descriptors and Boolean operators, a systematic search was carried out in the Web of Science, with citation comparisons in Scopus and Google Scholar. The search was carried out through October 2023 without regard to language or publishing year. The 30 most cited articles out of 4892 were chosen; between 1992 and 2017, they received a total of 953 citations. The majority of highly financed and mentioned studies came from the US [8-14]. Most of these articles were published in periodontics, general dentistry, and oral surgery journals, with lidocaine being the most researched anesthetic. Topical anesthetics have received comparatively few citations despite being widely used. According to our study, studies that have an immediate clinical impact are preferred above those that concentrate on pain management, especially when it comes to topical dental anesthetic. This emphasizes the necessity of additional study and advancement in this crucial area. Despite being relevant, works in the subject of topical anesthetic still have a relatively low citation impact, according to the bibliometric assessment that was done. The majority of these research are focused on industrialized nations. Furthermore, there is a dearth of funding for study in this field, especially in Africa and Oceania, where none of the 30 most referenced articles had any support. Whether used alone, in conjunction with other medicines, or as a reference ingredient for measuring the efficacy of other compounds, lidocaine continues to be the most thoroughly studied topical anesthetic. These results highlight a persistent and expanding endeavor to better topical anesthetics used in dentistry, with an emphasis on formulation improvement, increased efficacy, and decreased toxicity [17-26]. The second most commonly used topical anesthetic is benzocaine. In order to promote advancements in this sector, particularly the development of needle-free local anesthetic, we also emphasize the necessity of greater funding and wider international recognition. Thus, the way irreversible pulpitis is diagnosed, the periapical condition of the teeth, the tools and methods used to diagnose the pulp condition, the experience of all practitioners performing clinical procedures (examination, radiographic interpretation, clinical treatment), inclusion and exclusion criteria, the type of anesthetic solution or solutions, the technique or solutions used for administration, randomization, blinding, the amount of time that passes between administering anesthesia and determining whether the anesthesia was successful or starting the root canal treatment, the method of outcome measurement, taking into account power analysis to reach a clinical significance, if any, and finally any delayed or immediate side effects after the anesthetic injection [27-32].

Conclusion. In contemporary dentistry, local anesthetics are essential. They provide comfortable and painless procedures and strengthen the goodwill that exists between patients and dentists. Improvements in local anesthetic medications have greatly increased their efficacy,

ISSN NUMBER: 2692 - 5206 Volume 6. No 03. March ,2026

safety, and adaptability. Optimizing patient treatment requires an understanding of the pharmacology, duration of effect, and potential toxicity.

The particular requirements of each patient, the kind and length of the treatment, and postoperative pain management considerations should all be taken into account when choosing a local anesthetic. Additionally, it's critical to carefully review the patient's medical history, including any cardiovascular conditions. The advantages of a vasoconstrictor, such as prolonged anesthesia and hemostasis, must be weighed against any possible systemic consequences when deciding whether to use it or not. Overall treatment results are improved when local anesthetic selection is customized for each patient.

Anaesthesia success rates can be influenced by a number of factors. A patient's pain during endodontic operations may be predicted by certain factors. These issues could be resolved by using additional procedures before or during the therapy, or by applying strategies like premedication with a non-steroidal anti-inflammatory drug before the treatment visit. To allay worries about their study bias, researchers must be more cautious when disclosing specifics of their research.

References.

1. Patel BJ, Surana P, Patel KJ. Recent Advances in Local Anesthesia: A Review of Literature. Cureus. 2023 Mar 17;15(3):e36291. doi: 10.7759/cureus.36291.
2. dos Santos HCG, de Sousa ITC, Pestana AM, Bezerra AAC, Lucas ALM, Martins-Júnior PA, Franz-Montan M. Clinical Studies on Topical Anesthesia in Dentistry: A Bibliometric Analysis. Pharmaceuticals. 2025; 18(11):1611. https://doi.org/10.3390/ph18111611
3. Luo, Wen PhDa,b,*; Zheng, Kaiyue MDb; Kuang, Huifang MDb; Li, Zhixin MDb; Wang, Jinrong MDb; Mei, Jie MDb. The potential of articaine as new generation of local anesthesia in dental clinics: A review. Medicine 101(48):p e32089, December 02, 2022. | DOI: 10.1097/MD.0000000000032089
4. Aripov A.N., Aripov O.A., Akhundjanova L.L., Nabiev A.U., Nabieva D.A., & Khamroev T.T. (2022). Study the effect of yantacin on some indicators of cellular renewal and on the level of protein expression on rat hepatocytes in chronic heliotrine liver damage. International Journal of Medical Sciences And Clinical Research, 2(05), 06–13. https://doi.org/10.37547/ijmscr/Volume02Issue05-02.
5. Aripov A. N, Akhunzhanova L. L, Nabiev A. U, Aripov A. O, Khamroev T. T.. Antifibrotic Efficacy of a New Phytocomposition of Essential Phospholipids with Glycyrrhizic Acid, Ecdysterone, Lycopene and Proanthacyanidin in Experimental Severe Chronic Hepatitis Compared with Phosphogliv. Biomed Pharmacol J 2023;16(3).Pages : 1815-1825. DOI : https://dx.doi.org/10.13005/bpj/2761
6. Mundiya, J.; Woodbine, E. Updates on topical and local anesthesia agents. Oral Maxillofac. Surg. Clin. N. Am. 2022, 34, 147–155.
7. Aripov A.N, Akhunjanova L.L, Khamroev T.T, Aripov Abdumalik Nigmatovich, Akhunjanova Lola Lazizovna, & Khamroev Tolmas Tolibovich. (2022). Differential Analysis of Chronic Toxic Hepatitis Caused by The Introduction of Heliotrin Solution in Various Ways. Texas Journal of Medical Science, 4, 58–62. Retrieved from https://zienjournals.com/index.php/tjms/article/view/670
8. Rashidov S.Z., Rakhimboev S.D., Sanoev Z.I., Abdinazarov I.T., Khamroev T.T., Ismailova D.S., & Elmuradov B.J.. (2022). Study of psychoactive activity potassium salt 5-(o-aminophenyl)-1,3,4- oxadiazole-2-thion (D-361). International Journal of

Medical Sciences And Clinical Research, 2(09), 1–5. https://doi.org/10.37547/ijmscr/Volume02Issue09-01

9. Fernández-Castellano, E.R.; Blanco-Antona, L.A.; Vicente-Galindo, P.; Amor-Esteban, V.; Flores-Fraile, J. Pain Experienced during Various Dental Procedures: Clinical Trial Comparing the Use of Traditional Syringes with the Controlled-Flow Delivery Dentapen® Technique. Medicina 2021, 57, 1335.
10. Арипов А.Н., Арипов О.А., Ахунджанова Л.Л., Набиев А.Ў., Нишанбаев С.З., Набиева Д.А., Ҳамроев Т.Т. Тажриба шароитида сафорофлавонолозиднинг гепатотроп фаоллигини ўрганиш. Oriental Journal of Medicine and Pharmacology, 2(02), 55–64. https://doi.org/10.37547/supsci-ojmp-02-02-07
11. Zakhidova L.T., Saidkhodjaeva D.M., Sanoev Z.I., Tukhtasheva V.F., Rakhmanova H.A.., Hamroyev T.T. Toxicological Characteristics Of N-Deacetyllappaconitine Under Chronic Administration In White Rats. The American Journal of Applied Sciences, 3(03), 34-41. https://doi.org/10.37547/tajas/Volume03Issue03-06
12. Kammer, P.V.; Moro, J.S.; Martins-Júnior, P.A.; Cardoso, M.; Bolan, M.; Santana, C.M. The 100 most-cited papers in dentistry for individuals with neurodevelopmental disorders: Bibliometric profile of scientific research. Spec. Care Dent. 2022, 42, 369–375.
13. Khamroev T.T., Sanoev Z.I., Rakhimboev S.D., Abdinazarov I.T., Rashidov S.Z. Effect of antiarrhythmic substance N – dezacetyllapoconitin on the central nervous system. ISJ Theoretical &Applied Science, 07 (99), 153-157. http://soi.org/1.1/TAS-07-99-31 Doi:https://dx.doi.org/10.15863
14. A comparative evaluation of pain perception and comfort of a patient using conventional syringe and buzzy system. Suohu T, Sharma S, Marwah N, Mishra P. Int J Clin Pediatr Dent. 2020;13:27–30. doi: 10.5005/jp-journals-10005-1731.
15. Sanoev Z.I., Abdinazarov I.T., Rakhimboev S.D., Rashidov S.Z., Hamroyev T.T. Study Of The General Pharmacological Properties Of A New Antiarrhythmic N-Deacetyllappaconitine With Oral Administration. The American Journal of Medical Sciences and Pharmaceutical Research, 3(03), 60-64. https://doi.org/10.37547/TAJMSPR/Volume03Issue03-08
16. Sanoev Z. I, Ismailova D. S, Rakhimboev S. D. O, Khamroev T, T, Elmuradov B. Z, Abdinazarov I. T, Rashidov S. Z. O. Synthesis and Research Anticonvulsant Activity of Annulated Triazolo-Thiadiazine Derivative in Laboratory Animals. Biomed Pharmacol J 2023;16(4). DOI : https://dx.doi.org/10.13005/bpj/2820
17. Sanoev, Z.I., Djaxangirov, F.N., Sadikov, A.Z., Sagdullaev, S.S. Hamroyev T.T. Antiarrhythmic activity of N-deacetyllappaconitine when administered orally. Annals of the Romanian Society for Cell Biology,2021,25(2), 2339–2346. https://doi.org/10.37547/tajas/Volume03Issue03-06
18. Cooling the soft tissue and its effect on perception of pain during infiltration and block anesthesia in children undergoing dental procedures: a comparative study. Bose S, Garg N, Pathivada L, Yeluri R. J Dent Res Dent Clin Dent Prospects. 2019;13:159–165. doi: 10.15171/joddd.2019.025.
19. Sokhib Rashidov Zamon o‘g‘li, Muslimakhon Kamolova Mirzokhidjon qizi, Ikhvoliddin Mirzaev Komiljon o‘g‘li, Nodira Pardaeva Botir qizi, Sevara Rakhmatullaeva Shukhrat qizi/. (2025). The importance of cardiotonic drugs in medical practice, the range of applications and the advantages of their use. International Journal

of Cognitive Neuroscience and Psychology, 3(5), 95–100. Retrieved from https://medicaljournals.eu/index.php/IJCNP/article/view/1856

20. Shirvani, A., Shamszadeh, S., Eghbal, M.J., Marvasti, L.A. & Asgary, S. (2017) Effect of preoperative oral analgesics on pulpal anesthesia in patients with irreversible pulpitis—a systematic review and meta-analysis. Clinical Oral Investigations, 21, 43–52.
21. Sanoev Zafar Isomiddinovich, Rashidov Sokhib Zamon ugli, Raximboev Sukhrob Davlatyor ugli, Abdinazarov Ibrokhim Tuychievich, Khamroev Tolmas Tolibovich, Ismailova Dilnoza Safaralievna, & Elmuradov Burkhon Juraevich. (2022). Research of Anticonvulsant Activity of Compound 5- (P-Aminophenyl) - 1,3,4-Oxadiazole-2-Thion. Texas Journal of Medical Science, 13, 17–21. Retrieved from https://zienjournals.com/index.php/tjms/article/view/2434
22. Yu. R. Mirzaev, T. T. Khamroev, E. M. Ruzimov, B. N. Khandamov, & Sh. M. Adizov. (2022). Evaluation of the Effect on the Nervous System of Substances with an Alkaloid Structure Having Antitumor Activity. Journal Healthcare Treatment Development(JHTD) ISSN : 2799-1148, 2(06), 6–10. Retrieved from http://journal.hmjournals.com/index.php/JHTD/article/view/1577
23. Aripov A.N., Aripov O.A., Akhunjanova L.L., Nabiev A.O., Nabieva D.A., & Khamroev T.T. (2022). Study the antifibrous efficacy of plant proanthocyanidin in rats with chronic heliotrine liver damage. Frontline Medical Sciences and Pharmaceutical Journal, 2(05), 16–25. https://doi.org/10.37547/medical-fmspj-02-05-03.
24. Sokhib Rashidov Zamon o‘g‘li, Nilufar Ergasheva Ag’zamjon qizi, Elyor Zokirboyev Anvarjon o‘gli, Umidjon Akramov Abdusamad o‘g‘li, & Aziza Egamberdieva Farkhod qizi. (2025). Drugs That Increase the Tone of the Human Body and Pharmacological Characteristics of Immunodeficiency Agents. American Journal of Biomedicine and Pharmacy, 2(5), 300–306. Retrieved from https://biojournals.us/index.php/AJBP/article/view/1065
25. Sokhib Rashidov Zamon o‘g‘li, Murodjon Nabiev Mahammadkarim o‘g‘li, Mo'tabar Yoqubjonova Khusanboy qizi, Shakhzodakhon Bekmurodova Po‘latjon qizi, & Jumanazar To‘ychiev Saidqul o‘g‘li. (2025). Comparative Analysis of Drugs Used for Anemia and Drugs Storing Iron. Research Journal of Trauma and Disability Studies, 4(5), 190–195. Retrieved from https://journals.academiczone.net/index.php/rjtds/article/view/5141
26. Silva, S.A., Horliana, A.C.R.T., Pannuti, C.M., Braz-Silva, P.H., Bispo, C.G.C., Buscariolo, I.A. et al. (2019) Comparative evaluation of anesthetic efficacy of 1.8 mL and 3.6 mL of Articaine in irreversible pulpitis of the mandibular molar: a randomized clinical trial. PLoS One, 14, e0219536.
27. Sokhib Rashidov Zamon o‘g‘li, Shakhzoda Abduraimova Abdusattor qizi, Nigora Yusufjonova Mirrakhim qizi, Diyora Turdibekova Erkinjon qizi, & Makhsuma Dovutkho’jayeva Maqsudjonovna. (2025). Classification, Indications for Use, Range of Applications and Disadvantages of Medicines against Nematodes and Leishmania. Research Journal of Trauma and Disability Studies, 4(5), 196–201. Retrieved from https://journals.academiczone.net/index.php/rjtds/article/view/5142
28. Sokhib Rashidov Zamon o‘g‘li, Nigora Yusufjonova Mirrakhim qizi, Diyora Turdibekova Erkinjon qizi, Makhsuma Dovutkho’jaeva Maqsudjonovna, Shakhzoda Abduraimova Abdusattor qizi, Analysis of the effect of medicines used in medical

AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES
ISSN NUMBER: 2692 - 5206 Volume 6. No 03. March ,2026

practice for various diseases on the fetus , european journal of modern medicine and practice: Vol. 5 No. 5 (2025) 342-347.

29. Sokhib Rashidov Zamon o‘g‘li, Elyor Zokirboev Anvarjon ògli, Umidjon Akramov Abdusamad o‘g‘li, Aziza Egamberdiyeva Farkhod qizi, Munisa Qo‘shbekova Ro‘zimbek qizi. (2025). Analysis of general and specific pharmacological properties of fat-soluble vitamins. International Journal of Cognitive Neuroscience and Psychology, 3(5), 101–106. Retrieved from https://medicaljournals.eu/index.php/IJCNP/article/view/1857
30. Daryakenari, G.; Batooli, Z. A bibliometric and subject analysis of 3300 most-cited articles in dentistry. Clin. Exp. Dent. Res. 2022, 8, 1302–1310.
31. Karobari, M.I.; Maqbool, M.; Ahmad, P.; Abdul, M.S.M.; Marya, A.; Venugopal, A.; Shaik, G.M.; Scardina, G.A.; Messina, P.; Noorani, T.Y. Endodontic microbiology: A bibliometric analysis of the top 50 classics. BioMed Res. Int. 2021, 2021, 6657167.
32. Alam, B.F.; Najmi, M.A.; Qasim, S.B.; Almulhim, K.S.; Ali, S. A bibliometric analysis of minimally invasive dentistry: A review of the literature from 1994 to 2021. J. Prosthet. Dent. 2023, 130, 179–186.