UDK 616.21-085.322 + 615.322

OTORINOLARINGOLOGIYA KLINIKASIDA DORIVOR O‘SIMLIKLARDAN FOYDALANISH VA ULARNING AHAMIYATI

Xolmatov Jasurbek Abdixoshim o‘g‘li[1,2], Yuldasheva Shohidaxon Saitovna[2], Hansie Pilania[3], Rashid Muhammad Zubair[1], Shakarov Nodirbek Kolboyevich[2]

[1] Toshkent davlat tibbiyot universiteti, Farmakologiya kafedrasi, O‘zbekiston

[2] Alfraganus University, Farmatsevtika va kimyo kafedrasi, O‘zbekiston

[3] Toshkent davlat tibbiyot universiteti, Xalqaro fakultet talabasi, O‘zbekiston

Elektron pochta: jasurbekkholmatov01@gmail.com, drlaohu@icloud.com

Annotatsiya. Tabiiy davolash vositalariga bo‘lgan qiziqishning ortib borishi otorinolaringologiya sohasida dorivor o‘simliklardan foydalanish imkoniyatlarini o‘rganishga sabab bo‘lmoqda. Dorivor o‘simliklar quloq, burun va tomoq kasalliklarini davolashda qo‘llaniladi. Ushbu maqolada otorinolaringologiya klinikasida dorivor o‘simliklardan foydalanish, ularning xavfsizligi, samaradorligi va klinik ahamiyati tahlil qilinadi. Bunda zarchava, zanjabil, evkalipt va qizilmiya kabi keng tarqalgan dorivor o‘simliklarga alohida e’tibor qaratiladi. Mazkur o‘simliklar sinusit, allergik rinit, tomoq og‘rig‘i, o‘rta quloq yallig‘lanishi va laringit kabi kasalliklarda muayyan foydali xususiyatlarga ega. Yallig‘lanishga qarshi, mikroblarga qarshi va balg‘amni suyultiruvchi xususiyatlari tufayli ayrim dorivor o‘simliklar kasallik belgilarini yengillashtirish, infeksiyalarni nazorat qilish va nafas olish faoliyatini yaxshilashga yordam berishi mumkin.

Shuningdek, maqolada operatsiyadan keyingi tiklanish jarayonini qo‘llab-quvvatlash va og‘riqni kamaytirishda o‘simlik preparatlari bilan ingalyatsiya qilish hamda ular asosidagi eritmalar bilan tomoqni chayish imkoniyatlari muhokama qilinadi. Davolash samaradorligini ta’minlashda xavfsizlik, tegishli dozalarga rioya qilish va tibbiyot mutaxassislari nazorati muhimligi ta’kidlanadi. Bundan tashqari, dorivor o‘simliklarning sog‘liqni saqlashga kompleks va integrativ yondashuvdagi yordamchi o‘rni yoritiladi. Ushbu sharh otorinolaringologik yordam ko‘rsatishda dorivor o‘simliklarning bemorlar uchun davolash natijalarini yaxshilash imkoniyatlarini yoritish, shu bilan birga, ilmiy dalillarga asoslangan amaliyot va tibbiyot mutaxassislari bilan bemorlar o‘rtasidagi hamkorlikni rivojlantirishga qaratilgan.

Kalit so‘zlar: dorivor o‘simliklar, otorinolaringologiya, quloq-burun-tomoq kasalliklari, tabiiy davolash vositalari, fitoterapiya, sinusit, allergik rinit, tomoq og‘rig‘i, o‘rta quloq yallig‘lanishi, laringit, yallig‘lanishga qarshi ta’sir, mikroblarga qarshi ta’sir, balg‘amni suyultiruvchi ta’sir, o‘simlik preparatlari bilan ingalyatsiya, operatsiyadan keyingi tiklanish, integrativ tibbiyot.

Аннотация. Растущий интерес к природным средствам лечения привёл к изучению возможностей применения лекарственных растений в области оториноларингологии, где они используются для лечения различных заболеваний уха, носа и горла (ЛОР-органов). В данной статье рассматриваются применение, безопасность, эффективность и роль лекарственных растений в оториноларингологической практике с акцентом на такие распространённые растения, как куркума, имбирь, эвкалипт и солодка. Эти растения продемонстрировали определённые преимущества при лечении таких заболеваний, как синусит, аллергический ринит, боль в горле, средний отит и ларингит. Благодаря своим противовоспалительным, антимикробным и муколитическим свойствам лекарственные растения способствуют облегчению симптомов, уменьшению инфекционных проявлений и улучшению функции дыхательной системы.

Кроме того, обсуждается потенциальная роль ингаляционной терапии с использованием растительных средств и полосканий в поддержке послеоперационного заживления и купировании боли. Подчёркивается важность безопасности, соблюдения соответствующих дозировок и профессионального медицинского контроля для обеспечения эффективности лечения, а также дополнительная роль лекарственных растений в комплексном и интегративном подходе к здравоохранению. Цель данного обзора — осветить потенциал лекарственных растений в улучшении результатов лечения пациентов в оториноларингологии, одновременно подчёркивая необходимость применения научно обоснованных методов лечения и сотрудничества между медицинскими работниками и пациентами.

Ключевые слова: лекарственные растения, оториноларингология, ЛОР-помощь, природные средства лечения, фитотерапия, синусит, аллергический ринит, боль в горле, средний отит, ларингит, противовоспалительное действие, антимикробное действие, муколитическое действие, ингаляционная терапия растительными средствами, послеоперационное заживление, интегративная медицина.

Abstract. The increasing interest in natural remedies has led to the exploration of medicinal plants in the field of otolaryngology, where they are utilized to manage a variety of ear, nose, and throat (ENT) conditions. This article examines the application, safety, efficacy, and role of medicinal plants in the otolaryngology clinic, focusing on common herbs such as turmeric, ginger, eucalyptus, and licorice. These plants have demonstrated notable benefits in treating ailments like sinusitis, allergic rhinitis, sore throat, otitis media, and laryngitis. Through their anti-inflammatory, antimicrobial, and mucolytic properties, medicinal plants contribute to symptom relief, reduction of infections, and improved respiratory function.

Furthermore, the potential for herbal inhalation therapies and gargles to assist in postoperative healing and pain management is discussed. The importance of safety, appropriate dosages, and professional oversight in ensuring effective treatment is emphasized, along with the complementary role of medicinal plants in a holistic, integrative approach to healthcare. This review aims to highlight the potential of medicinal plants to improve patient outcomes in ENT care, while advocating for evidence-based practices and collaboration between healthcare professionals and patients.

Keywords: Medicinal plants, otolaryngology, ENT care, natural remedies, herbal therapy, sinusitis, allergic rhinitis, sore throat, otitis media, laryngitis, anti-inflammatory, antimicrobial, mucolytic, herbal inhalation, postoperative healing, integrative medicine.

Introduction. The inclusion of natural remedies into modern healthcare systems has seen a resurgence in recent years, propelled by increasing patient interest in holistic, non-pharmacological treatments. In otolaryngology, the branch of medicine that deals with conditions of the ear, nose, and throat, medicinal plants have gained a growing foothold for their potential to alleviate symptoms, improve patient outcomes, and complement conventional pharmacologic medical treatments. The use of herbs such as turmeric, ginger, eucalyptus, and licorice has become especially prominent in managing a variety of ENT disorders, such as sinusitis, allergic rhinitis, sore throat, otitis media, and laryngitis. This review aims to explore the role of medicinal plants in the otolaryngology clinic, examining their therapeutic potential, safety considerations, and augmentation of better healthcare practices.

Phytomedicine is defined as the use of plants, parts of plants as well as isolated phytochemicals for the prevention and treatment of numerous health concerns. Medical treatments cover the application of different components of plants (blossom, leaf, stem, radix), aromatic essential oils and herbal extracts as herbal teas, via massage as packs or wraps or in therapies using water, steam or inhalation. Phytomedicine is covered in many traditional

medicines, e.g., Traditional Chinese Medicine (TCM) or Kampo Medicine and Ayurveda. Herbal remedies have played an important role in treatment from ancient to modern times. Although these subjects lost their importance in 20th century because of the modern synthetic treatments, there is a renewed interest today in medicinal plants usage as natural products for the generation of semi-synthetic derivatives.

Materials and Methods. This review is based on a comprehensive analysis of existing literature regarding the use of medicinal plants in otolaryngology. Data were collected from peer-reviewed journals, clinical trials, and traditional medicine sources to evaluate the efficacy, safety, and applications of herbal treatments in managing ENT disorders. Articles and studies were selected based on relevance to the use of medicinal plants in otolaryngology, with a focus on conditions such as sinusitis, allergic rhinitis, sore throat, otitis media, and laryngitis. Only studies that provided clinical or pharmacological evidence of efficacy were included, while non-peer-reviewed sources, anecdotal reports, and studies lacking sufficient clinical data were excluded. The research involved an extensive review of medicinal plants commonly used in ENT care, including turmeric (Curcuma longa), ginger (Zingiber officinale), eucalyptus (Eucalyptus globulus), and licorice (Glycyrrhiza glabra). Their pharmacological properties—such as anti-inflammatory, antimicrobial, and mucolytic effects—were analyzed to determine their therapeutic potential, along with methods of administration, including herbal inhalation, gargles, and oral consumption.

Results. According to the World Health Organization (WHO), nearly 80% of the population of developing countries, even nowadays, relies on phytomedicines as their only affordable source of medication [14].

Traditional medicine is often described by practitioners of “modern” (western) medicine using skeptical terms such as “alternative,” “nonconventional,” “indigenous,” and “complementary,” when in fact many of the techniques and practices of “modern” medicine are little different from traditional practices when it comes to wounds. Traditional approaches depend almost entirely upon natural resources, such as water, plants, animals, and minerals, and continue to be valued and diversely practiced by a majority of the world’s population [14]. The practice of traditional Chinese medicine (TCM) is based on the Five-Phases theory and Yin-Yang theory, recorded in the ancient Chinese medical documents such as “*Shen Nong Ben Cao Jing*” and “*Ben Cao Gang Mu.*” Many, but not all, practitioners of TCM make extensive use of plants, ensuring it is effective, affordable, and accessible [6]. Additionally, approximately 54% of the new anti-cancer between 1940 and 2002 were derived from natural products [16]. Another study has determined that of all current pharmaceutical products, about 73%, include constituents derived from natural products [12]. The therapeutic activity of many traditional medicines are conferred by natural ingredients produced within the plant; consequently, the efficiency of TCM preparations can vary widely and are determined by the genotype, environmental, and growing conditions encountered by each source plant [6, 10]. Urbanization and industrialization of pharmaceutical engineering have increased demand for “off the shelf” TCM products with consistent composition, quality, and clinical efficacy. Concomitantly, industrialization has also introduced rigorous product testing for evidence of biological activity and clinical efficacy.

Medicinal Plants and Their Therapeutic Properties

Turmeric (Curcuma longa)

Turmeric, a well-known herb in both traditional medicine and modern holistic healthcare, is primarily recognized for its considerable anti-inflammatory and antioxidant properties. The active compound curcumin has been found to reduce inflammation in conditions such as sinusitis and allergic rhinitis, providing symptomatic relief and optimizing respiratory function. Moreover, turmeric has antimicrobial properties that contribute to reducing infections in the

respiratory tract, making it beneficial in the treatment of sore throat and laryngitis. Its role in mucosal healing further supports its use in postoperative care for ENT procedures.

Curcumin, an active substance found in the root of *Curcuma longa* and a member of the ginger family, has long been used as a medicine and as food seasoning [1]. In Traditional Ayurveda medicine curcumin is used to treat inflammation, respiratory disorders, liver disorders, and diabetes [4].

In traditional Chinese medicine, curcumin is the preferred treatment for abdominal pain. Having been extensively used for centuries by diverse ethnic groups, curcumin is one of the most widely studied nutraceutically. This highly pleiotropic molecule has been shown to interact with key cellular pathways at transcription, translation, and posttranslational levels. Target pathways include proinflammatory cytokines, apoptosis, NF–κB, cyclooxygenase-2, 5-LOX, STAT3, C-reactive protein, prostaglandin E2, prostate-specific antigen, cell adhesion molecules, phosphorylase kinase, transforming growth factor-*β*, triglycerides, ET-1, creatinine, heme oxygenase-1, AST, and ALT [5]. The subject of more than 100 clinical trials, *in vivo* studies, have predominantly focused on curcumin as a treatment for epithelial cancers. Experimental findings from these *in vivo* studies and *in vitro* experiments indicate curcumin elicits most of its beneficial effects via altering the pericellular and extracellular matrix [4]. Therefore, it is not unexpected that curcumin enhances fibroblast proliferation, granulation tissue formation, and collagen deposition in cutaneous wound healing [7].

Ginger (Zingiber officinale)

Ginger is another herb with a long history of use in traditional medicine, particularly for its anti-inflammatory and analgesic effects. It is widely used to treat sore throat and other inflammatory conditions of the upper respiratory tract. Ginger's ability to reduce nausea and support the immune system also makes it valuable in the management of otitis media and sinusitis, where systemic support is essential for recovery. Additionally, ginger is often utilized in steam inhalations and gargles, offering a natural alternative for symptomatic relief in ENT patients.

Another study compared the efficacy of ginger extract to loratadine, a commonly used antihistamine, in treating allergic rhinitis. Patients receiving ginger extract experienced notable improvements in nasal symptoms and quality of life, comparable to those treated with loratadine. Additionally, ginger extract was associated with fewer side effects, such as drowsiness and fatigue, possible making it a viable alternative treatment for allergic rhinitis [15].

Post-Tonsillectomy Recovery. A randomized controlled trial investigated the effects of ginger on patients recovering from tonsillectomy. The study found that ginger supplementation helped relieving postoperative pain, accelerated wound healing, and reduced the time to resume regular oral intake. Moreover, no adverse effects or increased risk of bleeding were observed. The authors concluded that ginger could be recommended as an addition to routine medical treatment to decrease morbidity following tonsillectomy [9].

Eucalyptus (Eucalyptus globulus)

Eucalyptus oil, renowned for its antimicrobial and mucolytic properties, plays a significant role in treating upper respiratory tract infections and conditions like sinusitis and laryngitis. Its decongestant effects help clear nasal passages, while its ability to relieve inflammation and soothe the mucous membranes makes it a significant component of herbal inhalation therapies. Furthermore, eucalyptus oil's antiseptic qualities help in managing infections that often accompany ENT conditions. In postoperative care, eucalyptus-based treatments are beneficial for pain management and reducing the risk of secondary infections.

Eucalyptus oil is one of the most famous phytomedicines used by patients and physicians against acute rhinosinusitis. The main constituent of eucalyptus oil is cineole. Its efficacy and

safety against acute rhinosinusitis was proven in a placebo-controlled, double-blinded and randomized clinical trial [8]. Importantly, treatment of purulent rhinosinusitis with cineole reduced symptoms more effectively and statistically significant compared to an alternative herbal preparation composed of five different medicinal plants (12 mg *Gentianae radix*, 36 mg *Primulae flos cum calycibus*, 36 mg *Ramicis herba*, 36 mg *Sambuci flos*, and 36 mg *Verbenae herba*) [11]. In this case, cineole as the main constituent of eucalyptus is observed to be clinically as superior to a combination of medicinal herbs, which are supposed to be effective against acute rhinosinusitis. This demonstrates that therapeutic efficacy of phytomedicine is based on synergistic or antagonistic interaction of many phytochemicals [3].

Licorice (Glycyrrhiza glabra)

Licorice root has been used for centuries in traditional medicine due to its soothing and anti-inflammatory effects. It is particularly effective for treating sore throat and laryngitis, as it can help reduce irritation and inflammation of the mucous membranes. Licorice has also been found to have antimicrobial properties, making it useful for treating infections that complicate ENT conditions. In addition, its role in immune modulation and as a mild expectorant further supports its use in respiratory health.

Postoperative Pain Management. A study investigated the efficacy of gargling with 1 gram of licorice in reducing and management of postoperative sore throat pain. The findings indicated that this dosage provided effective analgesia compared to lower doses, representing its potential as a postoperative pain management strategy [13].

Nasal Polyp Treatment. There has been research regarding the use of nasal irrigation with licorice extract as a treatment for nasal polyps associated with rhinitis and sinusitis. The study observed remarkable reductions in polyp size and improvements in symptoms, attributing these effects to licorice's ability to modulate fibroblast differentiation and extracellular matrix production through the MAPK/ERK-1/2 signaling pathway [2].

Safety and Efficacy Considerations. While medicinal plants offer promising benefits, their safety and efficacy must be carefully considered. It is essential to ensure proper dosages, as excessive use of certain herbs can lead to adverse effects. For example, prolonged use of high doses of licorice may result in hypertension and hypokalemia. Similarly, while turmeric and ginger are generally considered safe, excessive amounts may cause gastrointestinal upset or interact with anticoagulant medication. It is crucial that these treatments be used under the supervision of qualified healthcare providers, particularly when patients are undergoing concurrent conventional treatments.

Additionally, the quality of herbal products is a significant concern. Unregulated or poorly manufactured herbal products may be contaminated with heavy metals, pesticides, or other harmful substances. Therefore, the use of high-quality, standardized herbal preparations is essential to ensure patient safety.

Integrating Medicinal Plants into Holistic ENT Care. Medicinal plants should not be viewed as replacements for conventional treatments but rather as complementary therapies that can enhance patient care. Integrative healthcare, which combines the strengths of both conventional and natural therapies, provides a holistic approach to ENT health (Ernst, 2000). By incorporating medicinal plants into treatment plans, healthcare providers can offer patients more personalized care that takes into account not only their physical condition but also their lifestyle, preferences, and cultural beliefs. However, to ensure optimal outcomes, it is vital that patients engage in open communication with their healthcare providers regarding their use of medicinal plants.

Conclusion. The role of medicinal plants in the otolaryngology clinic is growing as more patients seek natural alternatives to conventional treatments for ENT conditions. Herbs like turmeric, ginger, eucalyptus, and licorice offer a range of therapeutic benefits, from anti-

inflammatory and antimicrobial effects to improved postoperative recovery. However, safety remains a priority, and medicinal plants should be used under professional guidance to avoid adverse reactions and ensure efficacy. The integration of these plants into an evidence-based, holistic approach to ENT care has the potential to improve patient outcomes and enhance overall health. Further research and collaboration between healthcare providers and patients are needed to optimize the use of these natural remedies in clinical practice.

REFERENCES

1. Akbik D., Ghadiri M., Chrzanowski W., and Rohanizadeh R. Curcumin as a wound healing agent. Life Sciences. 2014;116(1):1–7. https://doi.org/10.1016/j.lfs.2014.08.016.
2. Chang GH, Yang PR, Cheng YC, Hsu KH, Wu CY, Yang YH, Lin YS, Hsu CM, Tsai MS, Tsai YT, Chang PJ. Nasal irrigation with licorice extract (Glycyrrhiza glabra) in treating nasal polyps by reducing fibroblast differentiation and extracellular matrix production in TGF-β1-stimulated nasal polyp-derived fibroblasts by inhibiting the MAPK/ERK-1/2 pathway — an in vitro and in clinic study. BMC Complement Med Ther. 2022;22(1):313. https://doi.org/10.1186/s12906-022-03791-y.
3. Efferth T., Koch E. Complex interactions between phytochemicals. The multi-target therapeutic concept of phytotherapy. Curr Drug Targets. 2011;12:122–132. https://doi.org/10.2174/138945011793591626.
4. Fadus M. C., Lau C., Bikhchandani J., and Lynch H. T. Curcumin: an age-old anti-inflammatory and anti-neoplastic agent. Journal of Traditional and Complementary Medicine. 2017;7(3):339–346. https://doi.org/10.1016/j.jtcme.2016.08.002.
5. Gupta S. C., Patchva S., and Aggarwal B. B. Therapeutic roles of curcumin: lessons learned from clinical trials. The AAPS Journal. 2013;15(1):195–218. https://doi.org/10.1208/s12248-012-9432-8.
6. Han F., Li Y., Zhang X., Song A., Zhu H., and Yin R. A pilot study of direct infusion analysis by FT-ICR MS for rapid differentiation and authentication of traditional Chinese herbal medicines. International Journal of Mass Spectrometry. 2016;403:62–67. https://doi.org/10.1016/j.ijms.2016.01.012.
7. Joe B., Vijaykumar M., and Lokesh B. R. Biological properties of curcumin—cellular and molecular mechanisms of action. Critical Reviews in Food Science and Nutrition. 2004;44(2):97–111. https://doi.org/10.1080/10408690490424702.
8. Kehrl W., Sonnemann U., Dethlefsen U. Therapy for acute nonpurulent rhinosinusitis with cineole: results of a double-blind, randomized, placebo-controlled trial. Laryngoscope. 2004;114:738–742. https://doi.org/10.1097/00005537-200404000-00027.
9. Koçak İ., Yücepur C., Gökler O. Is ginger effective in reducing post-tonsillectomy morbidity? A prospective randomised clinical trial. Clinical and Experimental Otorhinolaryngology. 2018;11(1):65–70. https://doi.org/10.21053/ceo.2017.00374.
10. Qi Y., Li S., Pi Z. et al. Chemical profiling of Wu-tou decoction by UPLC-Q-TOF-MS. Talanta. 2014;118:21–29. https://doi.org/10.1016/j.talanta.2013.09.054.
11. Tesche S., Metternich F., Sonnemann U., Engelke J. C., Dethlefsen U. The value of herbal medicines in the treatment of acute non-purulent rhinosinusitis. Results of a double-blind, randomised, controlled trial. European Archives of Oto-Rhino-Laryngology. 2008;265:1355–1359. https://doi.org/10.1007/s00405-008-0683-z.
12. Wangchuk P. Therapeutic applications of natural products in herbal medicines, biodiscovery programs, and biomedicine. Journal of Biologically Active Products from Nature. 2018;8(1):1–20. https://doi.org/10.1080/22311866.2018.1426495.
13. Windpassinger M., Prusak M., Gemeiner J., Plattner O., Janik S., Besser G., Gstoettner W., Xuan P., Sessler D. I., Ruetzler K. Pain after licorice or sugar-water gargling in patients recovering

from oropharyngeal surgery—a randomized, double-blind trial. Journal of Personalized Medicine. 2024;14(10):1056. https://doi.org/10.3390/jpm14101056.
14. World Health Organization (WHO). WHO Traditional Medicine Strategy: 2014–2023. ISBN: 9789241506090. https://www.who.int/traditional-complementary-integrative-medicine/en/.
15. Yamprasert R., Chanvimalueng W., Mukkasombut N., Itharat A. Ginger extract versus loratadine in the treatment of allergic rhinitis: a randomized controlled trial. BMC Complementary Medicine and Therapies. 2020;20(1):119. https://doi.org/10.1186/s12906-020-2875-z.
16. Yuan H., Ma Q., Ye L., and Piao G. The traditional medicine and modern medicine from natural products. Molecules. 2016;21(5):559. https://doi.org/10.3390/molecules21050559.