**Western European Journal of Medicine and Medical Science**
Volume 3, Issue 05, May 2025
https://westerneuropeanstudies.com/index.php/3
ISSN (E): 2942-1918 Open Access| Peer Reviewed


# PHARMACOLOGICAL EVALUATION OF TRADITIONAL HERBAL REMEDIES USED IN TYPE 2 DIABETES: THERAPEUTIC INTEGRATION IN COMPLEMENTARY TREATMENT.

**Akbarov Asliddin**
Master of Science Research (MScR) Student
University of Malaya
**Matkarimova Gulnaz**
Assistant at the Department of Medical Biology and Genetics
Samarkand State Medical University
Researchers and Young Scientists, Uzbekistan
Email: ***asliddinakbarov20@gmail.com***

**Abstract:** Type 2 diabetes (T2D) is a chronic endocrine disorder characterized by insulin resistance and impaired glucose metabolism. While conventional therapies primarily focus on pharmacological interventions, there is increasing interest in complementary approaches, particularly the use of traditional herbal remedies. This study aims to evaluate the pharmacological properties of selected herbal remedies used in the management of T2D, with an emphasis on their therapeutic integration into conventional treatment strategies. A comprehensive review of literature was conducted to identify herbs commonly used in folk medicine, such as **Cinnamomum verum, Ginseng,** and **Gymnema sylvestre.** The pharmacological activities of these herbs, including anti-hyperglycemic, anti-inflammatory, and insulin-sensitizing effects, were examined in preclinical and clinical studies. The findings suggest that these herbal remedies can support glucose regulation, enhance insulin sensitivity, and reduce diabetes-related complications when integrated into standard medical care. However, further clinical trials are needed to confirm the efficacy, safety, and long-term benefits of these herbal interventions.
**Keywords:** T2dm, traditional herbal, therapies, insulin-sensitizing, anti-inflammatory, synergistic effects, management, integration, preclinical, complementary.

**Introduction:** Type 2 diabetes mellitus (T2DM) is a progressive metabolic disorder that has reached epidemic proportions worldwide, especially in developing countries. Characterized by insulin resistance and chronic hyperglycemia, T2DM contributes significantly to morbidity, mortality, and healthcare burdens. While conventional treatments such as oral hypoglycemic agents and insulin therapy remain the mainstay, many patients experience side effects, limited accessibility, or reduced efficacy over time. As a result, there is growing interest in complementary and alternative therapies, particularly the use of traditional herbal remedies that have been employed for centuries in various cultures. Several medicinal plants, including **Cinnamomum verum, Panax ginseng,** and **Gymnema sylvestre,** have demonstrated promising antihyperglycemic and insulin-sensitizing properties in preclinical and clinical studies. However, the integration of these remedies into modern pharmacological practice remains limited due to gaps in evidence-based evaluation. This study

**Western European Journal of Medicine and Medical Science**
Volume 3, Issue 05, May 2025
https://westerneuropeanstudies.com/index.php/3
ISSN (E): 2942-1918 Open Access| Peer Reviewed


aims to provide a pharmacological overview of selected traditional herbs used in the management of T2DM, assessing their mechanisms of action, therapeutic potential, and feasibility of incorporation into complementary treatment strategies.

**Methods:** This study employed a qualitative and descriptive review methodology to analyze the pharmacological effects of selected medicinal plants traditionally used in the management of type 2 diabetes mellitus (T2DM). Peer-reviewed journal articles, clinical trial reports, and ethnobotanical databases were systematically searched using keywords such as **"type 2 diabetes," "herbal medicine," "phytotherapy," "Cinnamomum verum," "Panax ginseng," and "Gymnema sylvestre."** Sources were obtained from databases including **PubMed, ScienceDirect, and Google Scholar, covering publications from 2000 to 2024.** Inclusion criteria focused on studies that provided pharmacological, preclinical, or clinical evidence of antidiabetic effects. The selected herbs were evaluated for their mechanisms of action, including their impact on insulin sensitivity, glucose uptake, pancreatic β-cell protection, and anti-inflammatory pathways. The analysis was aimed at identifying their potential integration into complementary treatment protocols for T2DM.

**Discussion:** Traditional herbal medicine has long played a significant role in the management of chronic conditions such as type 2 diabetes mellitus, particularly in regions where access to modern pharmacological therapies is limited. The reviewed plants **Cinnamomum verum, Panax ginseng,** and **Gymnema sylvestre** have each demonstrated notable antidiabetic mechanisms, including enhanced insulin sensitivity, increased glucose uptake, and beta-cell protection. While these effects are supported by numerous preclinical and some clinical studies, challenges remain in standardizing dosages, ensuring safety, and integrating these therapies into mainstream medicine. Furthermore, the synergy observed in phytotherapeutic combinations suggests a potential for greater efficacy when used alongside conventional treatments. However, regulatory, scientific, and cultural acceptance barriers must still be addressed to facilitate their wider adoption. More robust clinical trials and pharmacovigilance efforts are required to validate their therapeutic roles, reduce reliance on anecdotal evidence, and support their use in evidence-based complementary medicine.

*Cinnamomum verum*

Panax ginseng

*Gymnema sylvestre*

Western European Journal of Medicine and Medical Science
Volume 3, Issue 05, May 2025
https://westerneuropeanstudies.com/index.php/3
ISSN (E): 2942-1918 Open Access| Peer Reviewed


of integration into current medical practices. Additionally, more extensive clinical trials are needed to substantiate their therapeutic efficacy and safety in diverse populations and to establish clear treatment protocols. The synergistic effects of combining different herbal remedies hold considerable potential to enhance the overall therapeutic outcomes in T2DM management. This approach could reduce reliance on synthetic drugs, minimize side effects, and offer a holistic treatment option for patients. However, successful therapeutic integration requires addressing regulatory, cultural, and scientific barriers, as well as improving public awareness and acceptance of complementary herbal treatments.

To maximize the therapeutic potential of traditional herbs, further research should focus on understanding their mechanisms of action, optimizing dosages, and confirming their safety profiles through large-scale clinical trials. Collaborations between traditional medicine practitioners and modern healthcare providers could facilitate the incorporation of these remedies into mainstream treatments, contributing to a more integrative and patient-centered approach to managing T2DM.

In summary, traditional herbal remedies offer a promising and sustainable complementary approach to treating type 2 diabetes mellitus. Through continued research, regulatory support, and clinical validation, these remedies could become an essential part of integrated care for patients with T2DM, improving their quality of life and providing a more holistic treatment alternative.

## REFERENCES:

1. Akbarov Asliddin, & Matkarimova Gulnaz. (2025). The Synergistic Effect and Pharmacological Activity of Phytotherapeutic Combinations in Metabolic Syndrome. *American Journal Of Biomedical Science & Pharmaceutical Innovation*, *5*(04), 47–50. https://doi.org/10.37547/ajbspi/Volume05Issue04-11
2. Medagama, A. B., & Bandara, R. (2014). The use of Cinnamon as a supplement in patients with type 2 diabetes mellitus: an updated systematic review and meta-analysis. Diabetology & Metabolic Syndrome, 6, 1-11. https://doi.org/10.1186/1758-5996-6-72
3. **2.** Al-Romaiyan, A., et al. (2013). A novel extract of Gymnema sylvestre improves glucose tolerance in non-diabetic and diabetic human subjects. Phytotherapy Research, 27(4), 582–586. https://doi.org/10.1002/ptr.4755
4. Xie, W., & Du, L. (2011). The effect of Panax ginseng on glycemic control: a systematic review and meta-analysis of randomized controlled clinical trials. American Journal of Chinese Medicine, 39(6), 1123–1134
5. Neelakantan, N., Narayanan, M., de Souza, R. J., & van Dam, R. M. (2014). Effect of fenugreek (Trigonella foenum-graecum) intake on glycemia: a meta-analysis of clinical trials. Nutrition Journal, 13, 7. https://doi.org/10.1186/1475-2891-13-7
6. Eddouks, M., Maghrani, M., Lemhadri, A., Ouahidi, M. L., & Jouad, H. (2002). Ethnopharmacological survey of medicinal plants used for the treatment of diabetes mellitus, hypertension and cardiac diseases in the southeastern region of Morocco (Tafilalet). Journal of Ethnopharmacology, 82(2–3), 97–103.
7. Patel, D. K., Prasad, S. K., Kumar, R., & Hemalatha, S. (2012). An overview on antidiabetic medicinal plants having insulin mimetic property. Asian Pacific Journal of Tropical Biomedicine, 2(4), 320–330. https://doi.org/10.1016/S2221-1691(12)60032-X

**Western European Journal of Medicine and Medical Science**
Volume 3, Issue 05, May 2025
https://westerneuropeanstudies.com/index.php/3
ISSN (E): 2942-1918 Open Access| Peer Reviewed


**8.** Saeedi, P., et al. (2019). Global and regional diabetes prevalence estimates for 2019 and projections for 2030 and 2045: Results from the International Diabetes Federation Diabetes Atlas, 9th edition. Diabetes Research and Clinical Practice, 157, 107843.
**9.** Modak, M., et al. (2007). Indian herbs and herbal drugs used for the treatment of diabetes. Journal of Clinical Biochemistry and Nutrition, 40(3), 163–173.
**10.** Asgary, S., et al. (2012). Antioxidant and hypoglycemic effects of Salvia officinalis L. in healthy volunteers: a randomized, double-blind, placebo-controlled clinical trial. Journal of Research in Medical Sciences, 17(6), 527–532.
**11.** Pushparaj, P. N., Low, H. K., Manikandan, J., Tan, B. K. H., & Tan, C. H. (2007). Anti-diabetic effects of Cichorium intybus in streptozotocin-induced diabetic rats. Journal of Ethnopharmacology, 111(2), 430–434.
**12.** THE CLINICAL PRESENTATION PATHOGENESIS, AND MODERN MEDICAL AND TRADITIONAL FOLK MEDICINE BASED INTEGRATING TREATMENTS OF DERMATOVENEROLOGICAL AND OTHER DISEASES CAUSED BY VIRUSES: A PREVENTIVE APPROACH TO PUBLIC HEALTH UNDER THE LEADERSHIP OF PHARMACISTS. (2025). *UNIVERSAL JOURNAL OF MEDICAL AND NATURAL SCIENCES*, *3*(20), 48-54. https://scienceresearch.uz/index.php/UJMNS/article/view/253
**13.** Tokhirovich, A. A., & Maksudjanovna, M. G. (2024). Phytopharmacokinetics of Medicinal Plants and Drug Preparations Affecting Cardiovascular Diseases. *Web of Semantics: Journal of Interdisciplinary Science*, *2*(2), 10-12.
**14.** Asliddin, A., & Gulnaz, M. (2024). THE TREATMENT AND PREVENTION OF DERMATOLOGICAL SYMPTOMS CAUSED BY VIRUSES BASED ON MEDICINAL PLANTS, PHYTO AND PHARMACOTHERAPY. *IMRAS*, *7*(1), 70-72.
**15.** Asliddin, A., & Gulnaz, M. (2023). THE EXTRACT IS HIGHLY EFFECTIVE IN ARTERIAL HYPERTENSION ATHEROSCLEROSIS AND NEUROSES ITS ROOT IS TREATMENT FOR RHEUMATOLOGY GOUT AND DENTAL DISEASES THE ASPARAGUS IS AN INNOVATIVE VALUE IN MEDICINE AND MODERN PHARMACEUTICALS. *Galaxy International Interdisciplinary Research Journal*, *11*(8), 368-370.
**16.** Asliddin Tokhir Ugli Akbarov , ., Feruz Yusufovich, Nazarov , ., & Munira Alisherovna Xusseinova, . (2021). Features Of Intensive Therapy For Preeclampsia And Eclampsia. *The American Journal of Medical Sciences and Pharmaceutical Research*, *3*(01), 124–130. https://doi.org/10.37547/TAJMSPR/Volume03Issue01-19
**17.** Asliddin, A., & Gulnaz, M. (2023). Pharmacokinetics and Pharmacodynamics of the Plant Sarsabil Prepared on the Basis of Phytoactive and Extract of High Effectiveness in The Practice of Aesthetic Medicine Dermatology and Dermatocosmetalology Analysis of Theoretical and Practical Goals. *Texas Journal of Agriculture and Biological Sciences*, *21*, 32-34.
**18.** Asliddin Akbarov, & Gulnaz Matkarimova. (2025). THE CURATIVE PROPERTIES OF THE SARSABIL (ASPARAGUS) MEDICINAL PLANT AND ITS PHARMACOLOGICAL EFFECTS. *Web of Medicine: Journal of Medicine, Practice and Nursing*, *3*(1), 1–5. Retrieved from https://webofjournals.com/index.php/5/article/view/2808
**19.** Akbarov Asliddin Tokhirovich, & Matkarimova Gulnaz Maksudjanovna. (2024). Ear Throat Nose Otorhinolaryngological Diseases And Phytopreparations Used For Them Use Of The Sarsabil And Licorice Extracts, Eucalyptus, Afsonak, Plants In Pharmaceutical And

**Western European Journal of Medicine and Medical Science**
Volume 3, Issue 05, May 2025
https://westerneuropeanstudies.com/index.php/3
ISSN (E): 2942-1918 Open Access| Peer Reviewed


Folk Medicine. *The Peerian Journal*, *27*, 52–55. Retrieved from https://www.peerianjournal.com/index.php/tpj/article/view/745

**20.** Asliddin Akbarov, & Sevinch Tairova. (2025). Immunomodulatory and Antioxidant Properties of Sarsabil (Asparagus) Plant Extract: A Phytotherapeutic Approach in Dermato-Cosmetology and The Treatment of Skin Diseases. *International Journal of Scientific Trends*, *4*(1), 69–74. https://scientifictrends.org/index.php/ijst/article/view/459

**21.** Akbarov Asliddin Matkarimova Gulnaz. (2023). PREVENTION OF GERIATRIC DISEASES AND SYNDROMES IN THERAPEUTIC PRACTICE USING THE INNOVATIVE PHYTOPREPARATION SARSABIL. [Data set]. Zenodo. https://doi.org/10.5281/zenodo.10372380

**22.** Akbarov Asliddin Matkarimova Gulnaz. (2023). THE MEDICINAL EFFECT OF THE SARSABIL PLANT IN DERMATOLOGICAL DISEASES AND COSMETOLOGY. International Journal of Education, Social Science & Humanities. Finland Academic Research Science Publishers, 11(7), 626–628. https://doi.org/10.5281/zenodo.8223509

**23.** Tokhirovich, A. A.., & Maksudjanovna, M. G.. (2024). Use of Medicinal Sarsabil (Asparagus) Plant Phytotincture in Diabetes Hypertensive Pathologies and Regulation of Metabolism in the Organism. *Best Journal of Innovation in Science, Research and Development*, *3*(3), 802–807. https://www.bjisrd.com/index.php/bjisrd/article/view/1917

**24.** Akbarov A.T., & Matkarimova G.M. (2021). MEDICAL USE OF RED PLANT BOTANICAL CLASSIFICATION AND MEDICINAL PROPERTIES. Экономика и социум, (2-1 (81)), 35-37.

**25.** Акбаров Аслиддин Тохир Угли, & Маткаримова Гулназ Максуджановна (2023). ТОКСИЧЕСКОЕ ДЕЙСТВИЕ АНТИБИОТИКОВ И СВОЙСТВА. Research Focus, 2 (1), 364-368.

**26.** Akbarov Asliddin Toxir o'g'li, Qiyomova Dilfuzv Sharipovna, & Pardayeva Soxiba Bo'riyevna. (2021). PHARMACOLOGICAL PROPERTIES OF MEDICINAL PLANTS USED IN OTORHINOLARYNGOLOGICAL DISEASES. EURASIAN JOURNAL OF ACADEMIC RESEARCH, 1(3), 233–239. https://doi.org/10.5281/zenodo.4945569

**27.** Акбаров, А., & Назаров, Ф. (2023). Сурункали юрак етишмовчилигини комплекс даволашда неотондан узоқ муддатли фойдаланиш тажрибаси. *Научные работы одарённой молодёжи и медицина XXI века*, *1*(1), 22. https://inlibrary.uz/index.php/gifted-youth-medicine/article/view/26279

**28.** Tolibov, M., Akbarov, A., Abdullaev, D., Abdullaev, X., & Axmedova, M. (2024). SEVORAN USAGE IN THE MANAGEMENT OF PAPULOSQUAMOUS DERMATOSES. *GOLDEN BRAIN*, *2*(6), 112-119. https://webgoldenbrain.com/index.php/gb/article/view/128

**29.** Акбаров, А., & Назаров, Ф. (2023). Gipertonik kasallikka chalingan bemorlarda yurak geometriyasini standart ekokardiografiyada o'rganish . *Перспективы развития медицины*, *1*(1), 30–31. извлечено от https://inlibrary.uz/index.php/development_medicine/article/view/19856

**30.** Акбаров, А. Т. У. (2020). ОПТИМИЗАЦИЯ МЕТОДОВ ПРОФИЛАКТИКИ И ИНТЕНСИВНОЙ ТЕРАПИИ ОСЛОЖНЕНИЙ У БЕРЕМЕННЫХ С ХРОНИЧЕСКИМ ДИССЕМИНИРОВАННОЕ ВНУТРИСОСУДИСТОЕ СВЁРТЫВАНИЕ СИНДРОМОМ. *MODERN SCIENTIFIC CHALLENGES AND TRENDS*, 49.

**Western European Journal of Medicine and Medical Science**
Volume 3, Issue 05, May 2025
https://westerneuropeanstudies.com/index.php/3
ISSN (E): 2942-1918 Open Access| Peer Reviewed


**31.** Акбаров, А., & Маткаримова, Г. (2023). Таркибида сапонинлар сақловчи қизилмия ўсимлигининг доривор хусусиятлари. *Перспективы развития медицины*, *1*(1), 611. извлечено от https://inlibrary.uz/index.php/development_medicine/article/view/21506

**32.** Tolibov, M. M. (2024). ATOPIK DERMATITNI DAVOLASHDA LAZER TERAPIYASINING SAMARADORLIGI. *Educational Research in Universal Sciences*, *3*(1), 286-289.