Volume 3, Issue 1, January 2025 ISSN (E): 2938-3765

THE CURATIVE PROPERTIES OF THE SARSABIL (ASPARAGUS) MEDICINAL PLANT AND ITS PHARMACOLOGICAL EFFECTS

1 Asliddin Akbarov
2 Gulnaz Matkarimova
Science Researchers
E-mail: asliddinakbarov20@gmail.com

Abstract

Information used in this review was obtained from electronic database including PubMed central, Google scholars, Science direct, Scopus, and Sabinet. Based on the present findings, the existing literature still presents some breaches about the mechanism of action of various constituents of these plants, and their relation to other plant compounds in poly-herbal formulations, as well as their long-term use and safety. More in-depth studies are still needed for active compounds and biological activities of Asparagus laricinus, Asparagus africanus, and Asparagus densiflorus. Therefore, innumerable opportunities and possibilities for investigation are still available in novel areas of these plants for future research studies. It can be concluded that all selected Asparagus species have tremendous potential to improve human health and the pharmacological activities of these plants can be attributed to bioactive phytochemicals they possess. Historically, plants were used for numerous purposes for mankind in general, inter alia, feeding and catering, culinary spices, medicine, various forms of cosmetics, symbols in worship and for a variety of ornamental goods. They are still being used for these purposes. The traditional medicines are sold in market places and prescribed by traditional healers at their home [1] particularly in the rural areas where herbal medicine is the main source of the healthcare system. South Africa is blessed with a vast variety of plants since it has such a large diversity of more than 20,000 types of species. The research and scientific community find this to be a great source of interest [2]. Since the 1990s, great interest is being shown in plants that can be used as important sources of new medicines and herbs, which have become mainstream throughout Africa [3].

Keywords: Sarsabi, asparagus, dermato-cosmetology, plant, steroidal saponins, serotonin, diseases, antimicrobial, extract, pharmacological effects.

Introduction

Secondary metabolites produced by plants for plant protection do not only benefit plants, but they also have health benefits for human beings. These compounds result in antimicrobial medicines, anti-inflammatory drugs, anticancer drugs, and plant-based anti-oxidants. Phytochemical screening was performed on the leaves and roots of Asparagus laricinus Burch., and parts had tannins, saponins, terpenes, and steroids. However, only roots showed the presence of alkaloids. It was also shown that flavonoids which are known to have an ability to inhibit microbial growth also scavenge antioxidants. The leaf extract contained steroids, these being important compounds as sex hormones. Both leaves and stem extracts showed that they contain saponins, which

Web of Medicine: Journal of Medicine, Practice and Nursing
webofjournals.com/index.php/5

Licensed under a Creative Commons Attribution 4.0 International License.

ultimately has a suppressive effect on inflammation. This is a main reason why Asparagus laricinus Burch. is used in traditional medicine. In vivo anti-inflammatory activity studies of this plant are being conducted in the Unit of Drug discovery, CUT. Three steroidal saponins, which are the most probable components of estrogen, have been separated from the roots of Asparagus africanus Lam. and Asparagus officinalis L. that was reported to have uterine contractile properties. Steroidal saponins have been found to be one of the active principles of the majority of anti-fertility agents. In vitro and in vivo studies of the extracts of ethanol of leaves and roots of Asparagus africanus Lam. displayed the ability of both extracts to have a potential acetylcholine effect on uterine contraction. These results suggested the possibility of interaction of the extracts with endogenous acetylcholine to induce an abortifacient effect. Thus, this plant should not be used during pregnancy because of the possibility of unintentionally abortion.

Saponins isolated from this plant have displayed anti-inflammatory activities against several experimental types of inflammation in mice and rats. During the initial inflammation process, histamine and serotonin are released resulting in inflammation signs such as edema, pain, redness and heat. In a study by Kebede et al, rats were injected with edemagenic agents to trigger edema (sign of inflammation), root extracts of Asparagus africanus Lam. were administrated to the rats, and the expected edema was not observed as the plant inhibited an antihistaminic agent. The extract activity was then found to be more pronounced in the first phase of the rat edema (within 90 min), thus making it possible for the extract to contain antihistaminic activity.

Adaptogenic drugs are those which are useful as anti-stress agents by promoting non-specific resistance of the body. Although, the adaptogenic effect of A. racemosus is well documented, its use in psychological disorders like depression is not scientifically evaluated. Hence, the present investigation evaluates the antidepressant effect of MAR standardized to saponins (62.2% w/w). Rats were given methanolic extract of roots of A. racemosus in doses of 100, 200 and 400 mg/kg daily for 7 d and then subjected to forced swim test (FST) and learned helplessness test (LH). The results showed that MAR decreased immobility in FST and increased avoidance response in LH indicating antidepressant activity. In behavioral experiments, MAR increased the number of head twitches produced by 5-HTP and increased clonidine-induced aggressive behavior indicating facilitatory effect on both serotonergic and adrenergic systems respectively. However, MAR had insignificant effect on l-DOPA-induced aggressive behavior indicating absence of activity on dopaminergic system. MAR also reversed changes to the endogenous antioxidant system induced by FST. Thus, MAR has significant antidepressant activity and this effect is probably mediated through the serotonergic, noradrenergic systems and augmentation of antioxidant defenses and CE inhibited topical edema in the mouse ear, following administration at 200 mg/kg (i.p.), leading to substantial reductions in skin thickness and tissue weight, inflammatory cytokine production, neutrophil-mediated myeloperoxidase activity, and various histopathological indicators. Furthermore, ACE was effective at reducing inflammatory damage induced by chronic TPA exposure and evoked a significant inhibition of vascular permeability induced by acetic acid in mice.

Enhances memory and protects against amnesia MAR also significantly reversed scopolamine and sodium nitrite-induced increase in transfer latency on elevated plus maze indicating anti-amnesic activity. Further, MAR dose-dependently inhibited acetylcholinesterase enzyme in specific brain regions (prefrontal cortex, hippocampus and hypothalamus). Thus, MAR showed nootropic and anti-amnesic activities in the models tested and these effects may probably be mediated through

Web of Medicine: Journal of Medicine, Practice and Nursing
webofjournals.com/index.php/5

Licensed under a Creative Commons Attribution 4.0 International License.

augmentation of cholinergic system due to its anti-cholinesterase activity. Post-trial administration of Convolvulus pluricaulis (C. pluricaulis) and A. racemosus extract demonstrated significant decrease in latency time during retention trials. Hippocampal regions associated with the learning and memory functions showed dose dependent increase in AChE activity in Carbonic anhydrase 1 with A. racemosus and Carbonic anhydrase 3 area with C. pluricaulis treatment. The underlying mechanism of these actions of A. racemosus and C. pluricaulis may be attributed to their antioxidant, neuroprotective and cholinergic properties.

Chlorophytum.arundinaceum (C.arundinaceum), Asparagus adscendens (A. adscendens) and A. racemosus are used in the Indian traditional medicine system for improving the general state of health and for stress-related immune disorders. The effects of the methanol and aqueous extracts of the tuberous roots of these plants were examined in an experimental mouse stress model, induced by swimming. The extracts were shown to exert an inhibitory effect on pro-inflammatory cytokines, namely interleukin 1β and tumour necrosis factor α, and on the production of nitric oxide in mouse macrophage cells RAW 264.7 stimulated by lipopolysaccharide in vitro. Similar inhibition was also observed in the production of interleukin 2 in EL4 lymphoma cells stimulated by concanavalin A. Corticosterone levels in serum and adrenal glands were measured. The findings suggest that these plants may be beneficial in the management of stress and inflammatory conditions.

Conclusion:

Numerous studies have been conducted on different parts of A. racemosus, this plant has developed as a drug by pharmaceutical industries. A detailed and systematic study is required for identification, cataloguing and documentation of plants, which may provide a meaningful way for promoting traditional knowledge of the medicinal herbal plant.

References:

1. Mashele S, Fuku SL. Evaluation of the antimutagenic and mutagenic properties of Asparagus laricinus. Medical Technology SA. 2011;25(2):33-36
2. Wikipedia. Asparagus racemosus. USA: Wikipedia; [Online] available from: http://en.wikipedia.org/wiki/Asparagus_racemosus. [Accessed on 12th April, 2012] [Google Scholar]
3. Gogte VM. Ayurvedic pharmacology and therapeutic uses of medicinal plants. Mumbai: SPARC; 2000. [Google Scholar].
4. Frawley D. Ayurvedic healing-a comprehensive guide. Delhi: Motilal Banarsidass Publishers Private Limited; 1997. [Google Scholar]
5. Akbarov Asliddin, & Matkarimova Gulnaz. (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. Retrieved from https://www.zienjournals.com/index.php/tjabs/article/view/4517
6. Akbarov Asliddin, & Matkarimova Gulnaz. (2024). THE TREATMENT AND PREVENTION OF DERMATOLOGICAL SYMPTOMS CAUSED BY VIRUSES BASED

Web of Medicine: Journal of Medicine, Practice and Nursing
webofjournals.com/index.php/5

Licensed under a Creative Commons Attribution 4.0 International License.

ON MEDICINAL PLANTS, PHYTO AND PHARMACOTHERAPY. IMRAS, 7(1), 70–72. Retrieved from https://journal.imras.org/index.php/sps/article/view/776

7. Akbarov Asliddin, & Matkarimova Gulnaz. (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. Retrieved from https://giirj.com/index.php/giirj/article/view/5636
8. 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. Retrieved from https://web.semanticjournals.org/index.php/wos/article/view/28
9. 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
10. 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
11. 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 Folk Medicine. The Peerian Journal, 27, 52–55. Retrieved from https://www.peerianjournal.com/index.php/tpj/article/view/745
12. Акбаров Аслиддин Тохир Угли, Маткаримова Гулназ Максуджановна ТОКСИЧЕСКОЕ ДЕЙСТВИЕ АНТИБИОТИКОВ И СВОЙСТВА // ReFocus. 2023. №1. URL: https://cyberleninka.ru/article/n/toksicheskoe-deystvie-antibiotikov-i-svoystva
13. Tokhirovich, A. A., & Azamatovna, T. D. (2024). CHEMICAL COMPOSITION AND MEDICINAL PROPERTIES OF THE MEDICINAL DANDELION AND SARSABIL PLANTS. O'ZBEKISTONDA FANLARARO INNOVATSIYALAR VA ILMIY TADQIQOTLAR JURNALI, 2(26), 144-146. https://bestpublication.org/index.php/ozf/article/view/9361
14. Tolibov, M. M., & Akbarov, A. T. o‘g‘li. (2024). ATOPIK DERMATITNI DAVOLASHDA LAZER TERAPIYASINING SAMARADORLIGI. Educational Research in Universal Sciences, 3(1 SPECIAL), 286–289. Retrieved from http://erus.uz/index.php/er/article/view/5598
15. Samieva, G., Matkarimova, G., & Akbarov, A. (2022). CHANGES IN THE SPECTRUM OF CYTOKINES IN PRIMARY AND RECURRENT LARYNGOTRACHEITIS IN CHILDREN. Science and Innovation, 1(3), 378-383. https://scientists.uz/view.php?id=679
16. Акбаров Аслиддин Тохир ўғли Мардиева Зиёда Алишеровна Сафарова Гульрух Ўктам қизи (2021). ЮРАК-ҚОН ТОМИР КАСАЛЛИКЛАРИ ВА УЛАРДА ИШЛАТИЛАДИГАН ДОРИВОР ЎСИМЛИКЛАР КИМЁВИЙ ХОССАЛАРИ. Интернаука, (22-4), 71-72. https://elibrary.ru/item.asp?id=46334218

Licensed under a Creative Commons Attribution 4.0 International License.

Web of Medicine: Journal of Medicine, Practice and Nursing
webofjournals.com/index.php/5

17. Akbarov, A., & Umarov, M. (2021). CLINICAL, DIAGNOSIS, TREATMENT, AND CARE OF PATIENTS WITH TUBERCULOSIS LUNG OBSESSION AND GANGRENOUS. In Современные научные исследования: актуальные вопросы, достижения и инновации (pp. 299-303). https://elibrary.ru/item.asp?id=46435754
18. 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
19. 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. https://sciencecentrum.pl/wp-content/uploads/2021/01/MODERN_SCIENTIFIC_CHALLENGES%2034%20(web)%20(2).pdf#page=50

Web of Medicine: Journal of Medicine, Practice and Nursing
webofjournals.com/index.php/5

Licensed under a Creative Commons Attribution 4.0 International License.