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Research to Create an Adaptogenic Drug from Dry Extract of Ashwagandha (Withania Somnifera).

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ABSTRACT:

This article describes the properties of drugs and some types of drugs giving brief information and conditions of its preservation and medicinal plant raw materials - used for the production and preparation of medicines, about plants or their parts containing biologically active substances comments are made.

Keywords: substance, medical devices, pharmaceutical activity, certificate of alternative, infectious solution.

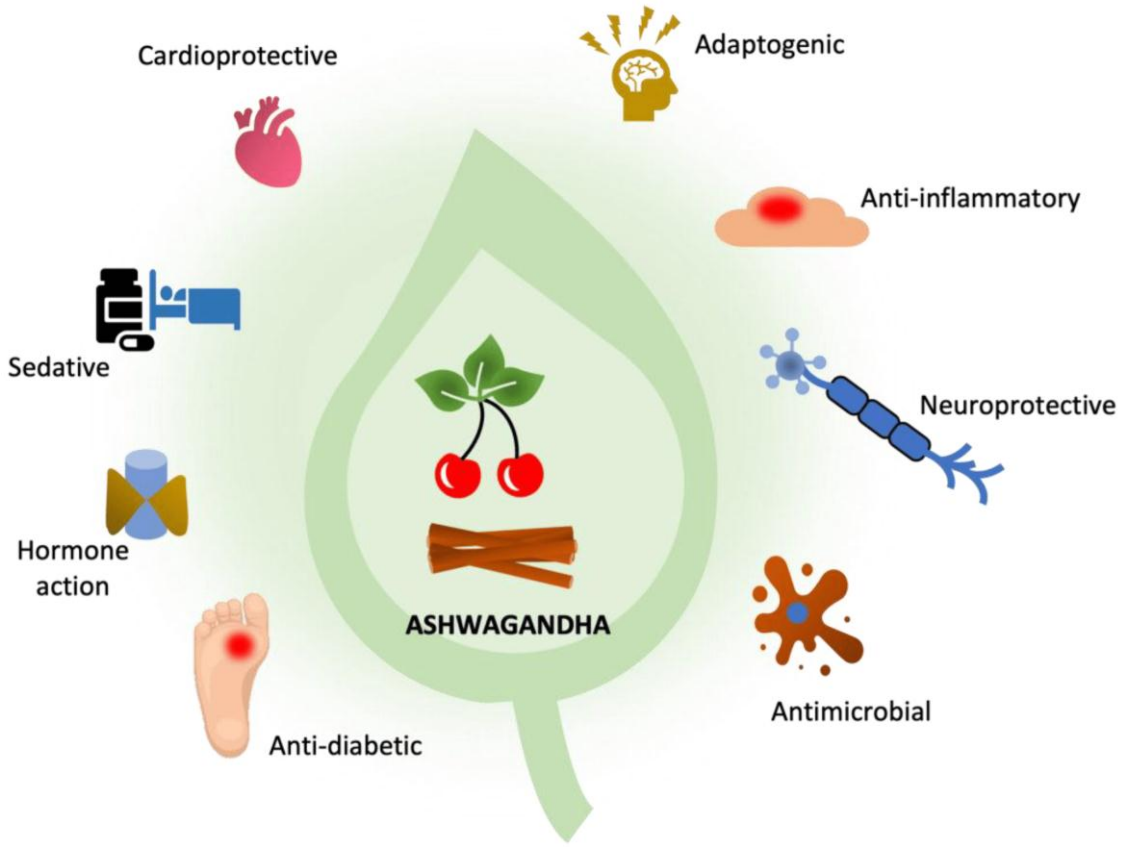
1. Introduction

Recently, there has been increasing interest researchers are attracted to work with medicinal plants as sources of secondary synthesis substances that are widely used in pharmacology, medicine, veterinary medicine, food and other industries industry. Of particular interest are plants that are secondary whose metabolites have a wide spectrum of action, in particular antimicrobial, antifungicidal, and also have anticancer activity. However, many of these valuable medicinal plants are today are on the verge of extinction, are rare and are listed in the Red Book. This is due to uncontrolled collection plant raw materials, limited distribution area of valuable culture, as well as the influence of abiotic and biotic factors nature. Overcome the constant decline in plant supplies resources is possible through the use of biotechnology methods, and particular, plant cell engineering. Among the known methods. The most popular method is clonal micropropagation plants in vitro (Mohammad, Aliabbas, Kumar, Rajkumar, 2009), which widely used for many valuable medicinal plants, are, for example, on the verge of extinction. This is due to the fact that these technologies have a number of advantages compared to classical ones (traditional) methods of plant propagation under in vivo conditions. For example, somatic cells of any plants, such as tropical or alpine, can be easily propagated in unlimited quantities in laboratory conditions in order to subsequently obtain from them specific metabolites at the required scale.

Main Part. The major biochemical constituents of ashwagandha are steroidal alkaloids and lactones, a class of constituents collectively known as withanolides. However, more than 12 alkaloids, 40 withanolides, and several sitoindosides (a withanolide containing a glucose molecule at carbon 27) have been isolated and identified from aerial parts, roots, and berries of Withania species (Dar et al., 2015; Mirjalili et al., 2009). In pre-clinical studies, ashwagandha and its components have been shown to have anti-inflammatory, anti-cancer, anti-stress, immunomodulatory, antioxidant, adaptogenic, neuroprotective, and endocrinological activities (Dar et al., 2015; Mirjalili et al., 2009). Because of its far-reaching biological mechanisms of action, there is an increasing number of human trials examining its efficacy for the treatment of a range of physical and mental conditions, and the advancement of overall health and performance. However, the body of available evidence, the dosages and extracts used, the quality of interventional trials, and the treatment durations investigated varies significantly. The aim of this systematic review is to summarise and critically appraise results from human trials on ashwagandha that have been conducted to date. No conversation about ashwagandha is complete without mentioning Ayurveda - traditional Indian medicine. In it, preparations from the leaves, stems, roots, fruits and flowers of this plant began to be used at least 2000 years ago. This is approximately the age of two classical Ayurvedic treatises, Charaka Samhita and Sushruta Samhita, where the use of ashwagandha as a tonic, anti-inflammatory and sedative was first described in detail.

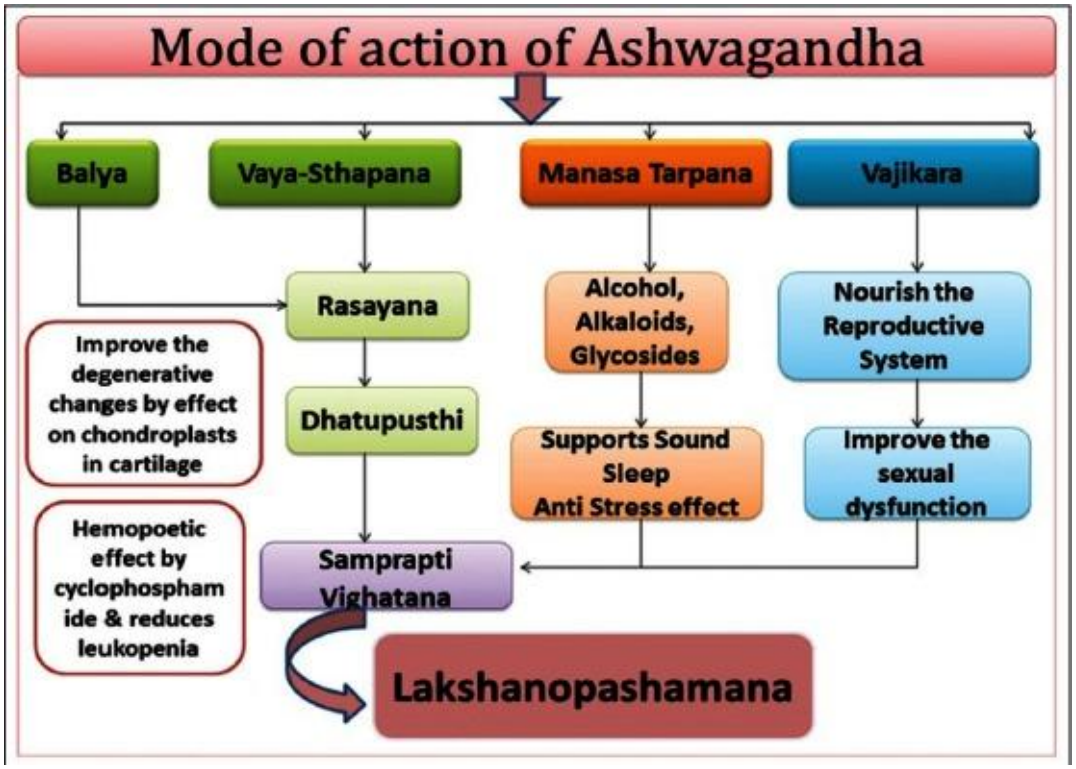
But science is interested in ashwagandha not because of its history, but because it is still used today. In India, where Ayurveda is officially recognized and widely practiced along with modern medicine, preparations from this plant are often prescribed to treat a wide variety of diseases. “From hiccups to gynecological problems,” as ethnobotanist James Duke writes. And at the same time - rheumatism, diabetes, arthritis, tuberculosis, asthma, cancer, mental disorders and male infertility. This is why Indian authorities and medical organizations are actively funding the study of ashwagandha. The main goal of the research is to check its safety, toxicity and compatibility with drugs. At the same time, the supposed medicinal properties are being studied. And the results of these tests can be divided into three categories.

1. Effects partially confirmed by experiments on cell cultures. For example, in a test tube, ashwagandha preparations can stimulate the production of T cells that destroy cancer cells. But this does not mean that ashwagandha is a truly effective antitumor drug.
2. Effects partially confirmed in animal experiments. For example, ashwagandha helps regenerate damaged neuronal processes in mice. But this does not turn it into a neuroprotector for people.
3. Effects confirmed in human studies. This also has its limitations. Not all clinical tests meet modern standards. Plus, there is a high probability that the results are due to the placebo effect. In India, ashwagandha is considered a sacred plant: its extract is part of amrita, the mythical elixir of immortality that Hindu gods drink. Therefore, expectations from its reception are traditionally too high.



Mechanism: It may be that ashwagandha suppresses the production of the stress hormone cortisol. During a stress response, the liver releases extra glucose into the bloodstream to fuel muscles in case you have to fight or flee. Suppressing cortisol production can dampen the stress response and therefore reduce the release of sugar. It is no coincidence that in animal experiments the most noticeable decrease in glucose levels after taking ashwagandha was observed precisely under stress. Although ashwagandha is often not recommended for prostate tumors due to the fact that it stimulates testosterone production, this effect has not been fully confirmed. Yes, in one study, two months of taking ashwagandha was enough for men aged 40-70 to boost testosterone by 15%. But, firstly, the figure is quite modest. And secondly, even this is most likely a temporary side effect associated with a decrease in cortisol levels. To produce testosterone, the body needs the same chemical components. Therefore, suppressing the production of one hormone automatically frees up resources for the production of another. Another widely touted benefit of ashwagandha is its ability to improve male fertility. Several studies seem to show that in men suffering from infertility due to stress, after taking an extract

of its roots, the number and motility of sperm increases. It is suggested that ashwagandha may protect sperm cells from oxidative stress - free radical damage. In any case, this is exactly how it acts on rat lymphocytes. But there are serious complaints about these studies: there are few subjects, there is often no placebo group, and many factors are not taken into account. And, according to other data, ashwagandha, on the contrary, can lead to a decrease in the number and motility of sperm, impotence and erectile dysfunction. True, also in rats. But this is at least a reason for doubt.



Ashwagandha for Depression.

The adaptogenic qualities of substances from the ashwagandha root make dietary supplements with an extract from it an effective method of auxiliary treatment of various depressive conditions. On the one hand, Indian ginseng reduces the release of cortisol, which reduces the level of anxiety, anxiety and stress. On the other hand, it simplifies and speeds up the process of falling asleep, promotes restful and long sleep without waking up. In addition, ashwagandha will give strength, vigor and energy, which are so necessary for people in a state of depression. Potential benefits of ashwagandha include better athletic performance and sleep. Some research suggests this herb may help people with conditions like anxiety and infertility, but stronger studies are needed.

2. Conclusion

Ashwagandha is a medically important herb and has a proven impact on human health. The findings from this study suggest that eight weeks supplementation of aqueous Ashwagandha root extract was associated with a significant reduction of stress levels in individuals and improved the overall quality of life. Hence, the use of this herb as a supplement for stress and anxiety management could be an excellent alternative option. Further studies conducted with a larger cohort and in diverse populations and with more biochemical, physiological and psychological evaluation may confirm the present findings.

3. References

1. Development and Standardization of Capsular Pharmaceutical Dosage form from Dry Extract of Ferula Tenuisecta // Oygul Rakhimova, Saodat Sharipova, Mukhammad Sodik Okhunov and others. Indian Journal of Forensic Medicine & Toxicology, 14(4), 7540–7547.
2. Using the method of mathematical planning of the experiment in the development of a quality control method of aerva lanata l. herb // Abdullabekova Viloyatkhon, Khaydarov Vosil, Sharipova, Saodat, Rakhimova Oygul Rakhim qizi, Tajieva Aipashsha. Cardiometry; Moscow Изд. 22, (May 2022): 108-117.
3. Development of an anti-inflammatory extract from leaves and immature fruits of walnuts // Sharipova Saodat, Rakhimova Oygul, Kuldoshev Abdulaziz and others. International Journal of Pharmaceutical Research (09752366). Apr-Jun2020, Vol. 12 Issue 2, p1729-1736. 8p.
4. Исследования в области разработки получения сухого экстракта из листьев грецкого ореха // Рахимова О.Р., Ходжаева М.А., Рахимова Г.Р., Ботирмухамедова С.Т., Шарипова С.Т. Фармацевтика журнали, 2020 йил, №3, 78-83 бетлар.
5. Семёнов Родиоласи илдизи қуруқ экстрактидан иммунстимулловчи препаратни ишлаб чиқиш ва стандартлаш // Хайруллаева Г.Б., Рахимова О.Р., Рахматуллаева М.М., Рахимова Г.Р., Ботирмухамедова С.Т. Ўзбекистон фармацевтик хабарномаси, 2020 йил, №2-3. 24-29 бетлар.
6. Изучение физико-химических и технологических свойств субстанции пирозалина гидрохлорида // Мадрахимова М.И., Рахимова О.Р., Адизов Ш.М., Рахимова Г.Р., Хандамов Б. Н. Universum: технические науки: научный журнал. – №9 (90). Часть 2. М., Изд. «МЦНО», 2021. – 22-26 стр.
7. Изучение физико-химических и технологических свойств сухого экстракта, применяющегося при воспалении почек и мочевыводящих путей // Касымова Ш.А., Рахимова О.Р., Рахматуллаева М.М. Universum: технические науки: научный журнал. – №10 (91). Часть 3. М., Изд. «МЦНО», 2021. – 52-57 стр.
8. Количественное определение s-аллилцистеина и аллиина в препаратах чесночного порошка // Рахимова Г.Р., Рахимова О.Р. Universum: химия и биология: научный журнал. – №7 (85). Часть 1. М., Изд. «МЦНО», 2021. – 36-42 стр.
9. Research on the study of the flavonoid composition and end-to-end standardization of the raw material and dosage form of calendula officinalis l. growing in Uzbekistan // AbdullabekovaV.N., Sharipova S.T., Rakhimova O.R., Tadzhieva A.D., Zakirova R.Yu. Journal of Pharmaceutical Negative Results; Volume 14; Regular Issue 03; 2023 y.
10. Development of technology of tablets containing iron // Rakhimova G.R., Rakhimova O.R. Universum: технические науки: научный журнал. – №5 (110). Часть 8, Москва. Изд. «МЦНО», 2023. – 25-30 стр.