Rose of Jericho - A Glorious Herb

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ABSTRACT

Anastatica hierochuntica L. belonging to the family Brassicaceae is the only member of the genus Anastatica. It is a desert plant, a resurrection herb, also known as 'the true rose of Jericho,' Kaff-e-maryam, is generally found in Saudi Arabia, Egypt, and North Africa, Iran. It is a small grey herb that grows up to 15 cm in height with minute, white, sessile flowers and oblong dentate leaves. It is known for its ability to survive in arid conditions—it dries up into a ball of 4–10 cm diameter and awaits the next rain, at which point it reveals small, slender leaves and tiny white flowers. The reason for calling it a resurrection herb is since its branches are immediately reconstituted in the presence of water because of its hygroscopic nature. It is picked during February to April from shallow gravel desert soils and allowed to dry.

This review intends to provide a summary of the scientific studies on the biological activities of *A. hierochuntica*.

Keywords: *Anastatica hierochuntica*, Anastatin, Hormone replacement therapy (HRT).

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INTRODUCTION

Anastatica hierochuntica L. is immensely helpful in Arab countries for treating women's health disorders. It contains eight valuable minerals as Mg, Ca, Cr, Mn, Fe, Co, Cu, and Zn.¹ The study results indicated that the plant's chemical properties might be helpful in treating menstrual cramps, asthma, depression, headache, fatigue depression, high blood pressure, and infertility problems. It also eases childbirth, as it is used as traditional medicine.

Menopause is clinically diagnosed when a previously menstruating woman is amenorrheic for at least 12 months and usually occurs at the age between 45 and 54 years when the ovarian function begins to decrease.

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*Corresponding Author: Nilofer A. Sayyed, Department of Pharmaceutics, M.C.E. Society's Allana College of Pharmacy, Azam Campus, Savitribai Phule Pune University, Pune, India, Mobile: +91-9975097912, E-mail: sayyednilofer.24@gmail.com The health consequences of menopause are associated with vasomotor symptoms such as hot flashes, psychic and somatic disorders, depressed mood, sleeping disorders, physical and emotional distress, skeletal and cardiovascular effects, and urogenital complaints.

PHARMACOLOGICAL ACTIVITY

Not much scientific evidence is available on the pharmacological activity of Maryam flowers are available. In the following review, few reported activities are discussed.

Antifungal Activity^{3,4}

Most of the antifungal drugs which are used are found to be inactive due to the development of antifungal resistance strains. Therefore there is a need to find novel drugs having this activity. Higher plant extracts effectively treat fungal infections, but the scientific evidence for it is very limited.³ Different Methanol, ethanol, and aqueous extract of the full flower were prepared, and it was concluded that all the extracts showed antifungal activity towards serious fungal pathogens.

The study was performed on different fungal strains.³ The antifungal activity was performed by performing an antifungal assay by standard disk diffusion method in which the extract plates were incubated in an incubator at 37°C for 14 days. The broth dilution method was performed to determine the minimum inhibitory concentration (MIC) of plant extracts. It was reported that the inhibitory activity of the extract increased with the concentration of the extracts.

Antioxidant Activity⁵

The methanolic plant extracts were evaluated for antioxidant properties by different methods like metal ion chelating capacity, scavenging of superoxide anion radical, and free radical scavenging activity by DPPH. DPPH radicals are widely used in the model system to investigate the scavenging activities of several natural compounds. When the DPPH radical is scavenged, the color of the reaction mixture changes from purple to yellow.¹² Thus, some studies conclude that with the increasing concentration of the extract, the antioxidant activity increased. The extract of rose of Jericho can be used as a natural antioxidant for food stabilization, as preservatives compared to synthetic ones.

Hepatoprotective Activity

Anastatin A and B are isolated active compounds from the extracts of *A. hierochuntica*. These compounds were subjected for D-glactosamine induced cytotoxicity in primary cultured mouse hepatocytes examination. The results present that Anastatin A and B showed significant hepatoprotective activity compared to the other flavonoids and commercial silybin.⁶

Antimalarial Activity⁶

The development of drug resistance poses one of the greatest threats to malaria control and results in increased malaria morbidity and mortality. The increase in resistance to antimalarial drugs has become a challenge against malaria control, and there is a need for new effective, easily available, and inexpensive antimalarial drugs to fight against this disease.

Concerning this condition, folk medicines are gaining wide importance in today's world. The whole plants of *A. hierochuntica,* a winter annual plant prescribed in Egyptian folk medicine, have anti-parasitic, antiviral, and have enhanced the T cell-mediated response.⁶ Ethanolic plant extract of the whole plant was used to find out the antimalarial effect. Parasitic *Plasmodium berghei* PZZ1/100 strain was used and maintained weekly of infected blood in mice. Overall results showed that the oral treatment was more active, i.e., caused higher degrees of suppression when compared with the intraperitoneal treatments. This activity was due to active constituents in the extract Anastatin A, and B that are believed to block protein synthesis in Plasmodium falciparum and have anticarcinogenic, anti-inflammatory anti-parasitic effects.⁷

Gastroprotective Activity⁸

"Kaff-e-Maryam" is used to treat stomach cancer and stomach problems, infections and to ease childbirth. A decoction of A. hierchuntica has been used against stomach upset, as antispasmodic, against fatigue, uterine hemorrhage, menstrual cramps, depression. It is believed to cure arthritis inflammations, infections, diabetes and asthma, viral and autoimmune diseases. The studies revealed that pre-treatment with *A. hierochuntica* extract offered protection against toxic damage to the stomach wall, thus supporting the folklore claim. The extract was found to exert its defensive role through its free radical scavenging and prostaglandin-inducing activities.

Immunologic Effect⁹

The immunologic effect of A. *hierochuntica* extract was studied on albino male mice. Metholic extract of the whole plant was prepared in a concentration of 25, 50, 100 mg/mL. Hydrocortisone was used as an immune-suppressant drug. Hydrocortisone was found to lead to statistically

significant inhibition of phagocytosis, ADA activity, and decreased IgG level after 2 weeks of treatment. The herbal extract has shows that it promotes the IgG level and the phagocytosis after 2 weeks of treatment.

Hormone Replacement Therapy in Menopause¹³

Hot flashes are considered a common experience for menopausal women and can compromise their quality of life. Hot flashes are described as a rapid feeling of exaggerated internal warmth that begins in the chest and rises to the neck and face, along with sweating, flushing, and chills. Its frequency is variable, and it may occur several times daily. It can have deleterious effects on a woman's work, recreation, sleep, and general quality of life.

Estrogen withdrawal appears to trigger hot flashes. Hormone replacement therapy (HRT) is a form of widely used treatment for menopause-associated symptoms. However, HRT has been associated with an increased risk of breast cancer and negative cardiovascular consequences.

The studies reveal that *A. hierochuntica* L. aqueous extract can increase the level of estrogen hormone.¹³ It has therapeutic action and may have the same mechanism of estrogen and has been suggested to be in the treatment of several diseases.

CONCLUSION

This review aims to provide a summary of the scientific findings on the biological activities of *A. hierochuntica* and suggests areas in which further research is needed. Like The flower of Maryam the use of traditional medicines and remedies are rooted in traditional knowledge and belief.

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