Review on Sarakhs (Dryopteris filix mas) an essential Unani Medicine

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Abstract : Medicinal plants are true natural medicines which are useful for the treatment and management of different diseases. The entire world is in search of natural compounds having medicinal potency due to lesser side effect issues. Dryopteris filix mas is a fern and Botanist called it filix-mas means male fern the male fern is one of the most robust species that breed in our country. Its rhizome used medicinally, filicic acid, flavaspidic acid, filmaron, flavonoids are chemical constituents present in it and possess Mujaffif quruh, Qatil e kiram e shikam, Kasir e riyah actions. Studies has been done for its antioxidant, Antibacterial, antifungal, abortifacient actions.

Keywords: Sarakhs, male fern, dryopteris filix mas, Qatil e kiram e shikam, filicic acid.

I. INTRODUCTION:

Sarakhs is one of the important drug mentioned in Unani system of medicine. The Unani name of *Sarakhs* is *Bataras* and some people called it *Falhoon.* [1] Colour of its root is blackish and brownish as colour of vinegar. Many nodes and fibres are present on the surface. It is of two types – male and female. Male plant has no flower and fruit. There is only one stalk which is approximately one meter in length. One small branch arises from the root on which small leaves are clustered. Leaves are arranged nearer to each other like birds feather. Female plant has many branches on which leaves are attached longitudinally. It has long roots. Both types of plants are found in hilly regions. In Ikhtiyarat e badiee it has been mentioned that roots of Sarakhs look light green on fracture. The good quality is one which is heavy and blackish in colour [2]

II. Ethnobotanical description:

2.1 Distribution:

This fern grows in all parts of Europe, temperate Asia, north India, north and south Africa, the temperate parts of the United States and the Andes of South America.[3]

2.2 Description:

The male fern is called Dryopteris meaning ‘oak fern’ in Greek. It acquired this name because the male fern is habitually found to grow in oak woods. On the other hand botanists call this species ‘filix mas’ meaning the male fern. It is also known as the ‘bears paw’ probably because the resemblance of its rhizome or tubers that are hairy and dark brown. This herb grows up to two to four feet in height and bears insipid green leaves also known as fronds. These fronds are narrow and tasselled and grow closely packed all the way up to the fleshy stem. Each frond is wide and spreading, stiff, erect, broadly lanceolate or lance – shaped, the stalk covered with brown scaly hairs. The pinna are arranged alternately on the mid – rib, the lower ones decreasing in size , and each pinna divided again almost to its own mid – rib, the pinnules being oblong and rounded , with their edges slightly notched and their surface somewhat furrowed. The sori are on the upper half of the frond, at the back of the pinnules, in round masses towards the base of the segments, covered with a conspicuous, kidney shaped thin membrane. On the underside of the fronds, there are two rows of dark brown spores. The rhizome or tuber of the male fern is reddish brown in colour and is usually small, bulky and scaled. The root – stock or rhizome is short, stumpy and creeping, lying along the surface of the ground or just below it. From its under surface spring the slender, matted roots.[3][4] The crown of the rhizome is a brown, tangled mass, with the hairy bases of the leaves, and in it is contained the mass of undeveloped fronds which, as they unroll, grow in a large circular tuft. [3] The rhizome is brownish black, ovoid-cylindrical pieces about 6-15cm long and 3-4cm in diameter.[5] The rhizome used is three to six inches long, and with the closely imbricated and slightly curved remnants of the stipes two to three inches thick. The latter remains green for about a year after which it turns brown. The rhizome is fleshy, externally dark brown, internally pale green and spongy. On transverse section near the surface eight larger fibro vascular bundles arranged in an interrupted circle, outside of

which are a number of smaller ones. The stipes has about eight small vascular bundles in a loose circle. The spongy texture is due to the thin walled parenchyma and to the large intercellular spaces, into which stalked glands project which exude a green liquid. The rhizome has a slight disagreeable odour and a sweetish afterward, somewhat bitter astringent and nauseous taste. [4]

Fig 1: Market sample of rhizome of Sarakhs

2.3 Scientific classification:

Kingdom: Plantae

Division : Pteridophyta

Class: Pteridopsida

Order : Polypodiales

Family : Dryopteridaceae

Genus: Dryopteris

Species: D.filix mas[6]

2.4 Vernaculars:

Arabic : Qarfas

Persian : Keel daru

Urdu: Sarakhs

Bengali: Pankhraj

English: Male fern[7]

Tamil : Hirvi, Iruvi.[8]

III. History:

The root of the plant is being used by ancients as a vermifuge. Theophrastus, Dioscorides, and Pliny all have described its uses. It is used as a domestic remedy for worms throughout the middle ages and finally was recorded by Valerius Cordus as a drug to be taxed in Germany in the sixteenth century. Daniel Mathieu, a pharmacist of Berlin was one of the promoters for the use of male fern as a chief ingredient combined with purgatives as a secret remedy for tapeworms. J.Peschier, a pharmacist of Geneva, introduced the extract in ether in 1825, which was not, however, employed in England to any extent until the middle of the last century. Its great success is introduced in the orthodox medical profession. To this day, the plant is recognized in the United States Pharmacopoeia and other official pharmacopeia's in various countries. Dr. Christopher recommended instead to advise the patient to eat, for a day or so, foods that the tapeworm dislikes, such as onions garlic, pickles, and salted fish. This weakens the worm and tends to loosen his grip so that when the medicine is taken, it acts upon the tapeworm and causes it to be expelled more easily.[4]

IV. Chemical constituents:

These are oleoresin, filicic acid, flavaspidic acid, filmaron and albaspidin, glycosides, anthracene derivatives, steroids/ triterpenoids, tannins, flavonoids, and alkaloids. [9].

V. Temperament :

VI. Mizaj (Temperament):

Haar 2° yaabis 1°, [1] haar 1° yaabis 2°,[10] Haar yabis 2°,[11] Haar yabis 3° [12]

VII. Actions&Uses :

7.1 Af'al (Actions):

It has Mujaffif quruh, Qatil e kiram e shikam, Kasir e riyah ,[7] Mufatteh sudad actions. It acts as abortifacient and mosquito repellent when used with honey.[2] It has Mufatteh sudad kabid, Qatil e deedan wa habbul qara, Qatil janeen, [12] and Mohallil [13] actions also.

7.2 Istemal (Uses):

Khafqan, Irqun nisa, Niqras, Deedane ama.[2][10] .

VIII. Toxicity,Corrective,Substitute :

8.1 Mazarrat (Toxicity):

It is harmful to lungs and kidneys. [2]

8.2 Musleh (Corrective):

Shah baloot [2]

For kidneys – Kateera[2]

8.3 Badal (Substitute):

Sheikh mentioned Armani and kameela as a substitute. In Ikhtiyarat badiee Tukhm e shibram is mentioned as substitute and according to Antaki honey is used as substitute.[2] . Kasoos (12) and Palas papda are also mentioned as a substitute. [7]

IX. Miqdar e khurak (Dosage):

7g [2]

1-3g [7]

X. Murakkabat (Formulations):

Majoon Sarakhs

XII. Pharmacological Actions:

Abortifacient, Antibacterial, Antiseptic, Antiviral, Astringent, Cytotoxic, Insecticide, Laxative, Taenifuge, Vermifuge.[15] The floroglucidos have the property that has to paralyze the muscles of various intestinal worms, which once immobilized, is easily released from the walls of the entire intestinal tract, being eliminated along with faeces.[16]

XIII. Scientific Studies:

13.1 Antioxidant and Cytotoxic Activity:

The methanolic extract of the leaves of Dryopteris filix mas showed dose dependent scavenging activity of DPPH radical with good reducing power of the extract. The methanolic extract also possessed cytotoxic activity. [17][18]

13.2 Antibacterial activity:

The methanolic extract obtained from ferns inhibited the growth of Gram negative Escherichia coli, Pseudomonas aeruginosa, Salmonella abony and Gram positive Staphyllococcus aureus and Enterococcus faecalis. The highest antimicrobial activity was shown against E. coli, Salmonella abony and Enterococcus faecalis. [9] D. filix mas has the most remarkable antimicrobial activity among five fern viz. Lygodium altum , Salvinia molesta, Salvinia cuculata, Helminthostachys zeylanica, Dryopteris filix mas and its antimicrobial spectrum covers both gram +ve and gram –ve.[19]

13.3 Anti fungal activity:

Methanolic and flavonoidal extracts (free and bound) of Marchantia polymorpha L., Dryopteris filix mas (L.) Schott and Ephedra foliata Boiss, were screened against three fungal plant pathogens: Alternaria solani, Fusarium oxysporum and Rhizoctonia solani. The extracts from D.filix mas and E. foliata showed >80% of mycelial inhibition of A. solani whereas M. polymorpha and D.filix mas (rhizome) completely inhibited the mycelial growth of R. solani when tested at highest concentration (5 mg/ml). Inhibition of spore germination of fungi (A. solani and F. oxysporum) was observed to be 100% by most of the extracts at 10 mg/ml.[20]

13.4 Insecticidal activity:

In an in vitro study the plant extracts Dryopteris filix mas, Tanacetum vulgare, Juglans nigra, Syzygium aromaticum and Allium sativum showed high Antischistosomal activity.[.21]. Dryopteris filix mas caused 100% larval mortality indicating absolute toxicity to the pest.[22]

13.5 Toxic effects on heart:

Toxic effects of male fern were evaluated on cats and rabbits. IV injections of Filmaron or extracts of the fern by mouth in the lethal doses resulted a severe cardiac involvement – arrhythmia, disturbance of ventricular conductance and myocarditis.[23]

13.6 Contraceptive Activity:

The plant extract inhibited spontaneous-induced contractions, oxytocin-induced and high KCl-induced uterine contractions. The plant extract had no effect on oxytocin-induced contractions under calcium-free conditions showing its inhibitory effect on uterine contractility. This may have possible application as a tocolytic or as contraceptive, as most contraceptive plants have shown uterine-relaxing effect. [24]

13.7 Anti diarrhoeal activity:

The methanol extract produced a significant dose - dependent decrease in the gastrointestinal transit time and also caused a reduction in intestinal fluid volume. The results showed that the methanol extract of D. filix-mas possess antidiarrhoeal activity, possibly mediated by the reduction of gastrointestinal peristalsis.[9]

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