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Medical application of Ashok tree (Saraca asoca): A review

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***Abstract*---**Ashoka briksh is a plant from the Saraca asoca family (Caesalpiniaceae). For the release of a separate section of Sarac aasoca, this paper explains several bioactivities: antibacterial, antioxidant, etc. Medicinal plants (bark, flowers, and leaves) were harvested from diverse portions of ancient Indian plants (bark, flowers, and leaves). In India, the Ashoka tree is both a sacred and traditional plant, as well as a popular therapeutic cure. Itching, ulcers, eczema, psoriasis, dermatitis, scabies, and inflammation are commonly treated with the leaves and blooms of the Ashoka tree. Colds, vaginal issues, diabetes, and a number of other ailments are all treated with it. There are Alkaloids, Flavonoids, Glycosides, Saponins, Phenols, Steroids, Tannins, and Triterpenoids involved. This research is based on a collection of articles published between 2000 and 2021 by Pubmed, Elsevier, Springer, and other internationally known journals. According to the current study, almost all S. ascoca isolated plants have photochemical, antibacterial, antifungle, and antioxidant activities.

***Keywords*---**Saraca asoca, medicinal value, photochemical, antibacterial, antifungle, antioxidant activities.

Introduction

Saraca asoca (Roxb.) De Wilde belongs to the family Caesalpiniaceae is commonly known as Asoka. This species is currently listed as a 'globally vulnerable' species by the IUCN 2013. It is also called Ashoka, Sita Ashoka, Karkeli (Sanskrit), Sita Ashok, Ashoka (Hindi, Bengali, Gujarati, Marathi), Asogam (Tamil), Oshok (Bengali), Ashokmu, Vanjulamu (Telugu), Asokam (Malayalam), Alshth, Achenge, Kenkalimara, Ashokadamara (Kannada). The word Ashoka means "without suffering", a reference to this bark's reputation for keeping a woman healthy and

young. Many commercial ayurvedic treatments, such as "Ashokrishnam" and "Ashokaghritam," like using Ashoka as the main ingredient.

It is especially sacred to the Hindu god of love, Kamadeva, for whom it is worshipped every year on December 27; it is also known in Hindu mythology as the Ashoka tree, under which the Indian philosopher and founder of Buddhism Gautama Siddhartha (c.563 – 483 BC) was born; and it is also known in Hindu mythology as the Ashoka tree, under which the Indian philosopher and founder of Buddhism Gautama Siddhartha (c.563 – 483 BC).

It is up to a height of 9 meters and is an evergreen tree. The orange-yellow flowers are clustered in a dense corymb and are orange-yellow in color. It can be found in India's central and eastern Himalayas up to a height of 750 meters. The leaves are 15–20 cm long, with 6–12 oblong, stiff sub-chorus leaflets. The leaves are narrow, lanceolate, and cork-like at the base. They are intra-petiolar, unilateral, but have single-shot peristipules. The bark is dark brown or almost black in colour, while the surface is grey or warty. Because of the presence of rounded or protruding lentils, the stem's bark is rough and irregular. The bark is fluted, smooth, with rounded ridges, traversal-free, and occasionally cracked. A thin pale and continuous layer beneath the cork liver is visible due to fracture splinting, exposing the striated surface. The blossoms have a pleasant scent. Flowers are polygynous, yellow-orange, becoming red, corymbose, with axial panicles in short lateral panicles, tiny, deciduous, and petaloid calyxes. The seeds are 4–8, compressed and ellipsoid-oblong . The distribution of Ashoka species is mainly in the Western Ghats of Maharashtra, Goa and Karnataka and Eastern Ghats of Tamil Nadu, Kerala, Odisha and parts of Meghalaya. It is distributed in the central and eastern Himalayas, eastern Bengal, Burma, the Western Peninsula, Ceylon and Malaya.

Classification

Kingdom : Plantae
Phylum : Tracheophyta
Division : Magnoliophyta
Class : Magnoliopsida
Order : Fabales
Family : Fabaceae
Sub Family : Caesalpinaceae
Genus : Saraca
Species : asoca

Medical Uses

The plant is used in the treatment of dyspepsia, dyspepsia, blood disorders, tumors etc.. Ashoka as a major ingredient, of which important ones include Ashokarishta, Ashokaghrita, Ashok Kwatha. This plant is useful in dyspepsia, fever, burning sensation, colic, ulcer, menorrhagia, leucorrhoea, pimple etc. Ashoka is blood purifier and used in all skin diseases, bleeding, dysmenorrhea menopausal, menorrhagia, painful menstruation, blood circulation and purification, cancer, diarrhea, dysentery, edema, heart disease, hepatitis, herpes,

jaundice, joint pain, kidney and gallstones is done. , paralysis, skin problems, rheumatoid arthritis, urinary tract obstruction . Ashoka is also a cardiac tonic that can act as an adjunct therapy for people suffering from hypertension, circulatory problems, edema, congestive heart failure, etc.

The bark is extremely useful in gynecological problems, especially in the treatment of menstrual disorders associated with excessive bleeding, pain, dysmenorrhea, abdominal pain, and uterine spasms and anthelmintic, antipyretic, emollient, in colic and blood diseases, gall, colic, ulcers, fractures, menorrhagia, metropathy, dyspepsia, viromegaly. The bark is useful in menorrhagia, internal bleeding piles, and hemorrhagic dysentery caused by uterine fibroids .Its bark has natural detoxification properties which make it very useful for improving skin complexion and keeping the body free from toxins from within. Its natural cleansing properties can help the body stay toxin-free. Also for common pitta agitated states, Ashoka bark acts as a coolant and helps to relieve thirst, excessive burning, anger, emaciation, sweating, etc.

The flowers are also regarded as a medicinally important plant part and used as a therapeutic agent in the treatment of diabetes, cancer hemorrhagic dysentery, uterine infections such as menorrhagia and other types of uterine disorders. The flowers are traditionally used as a uterine tonic, anti-diabetic and anti-syphilis. The dried flowers are used for the treatment of syphilis, hemorrhage, diabetes and dysentery. It also helps get rid of toxins from the body and is effective in purifying the blood naturally and preventing skin allergies. The seeds are used to treat bone fractures and vesicle calculi. The leaves have blood purifying properties and drinking cumin seeds mixed with its juice is beneficial in stomach-ache.

Chemical contain

Several compounds, including (+)-catechins (CA), (+)-epicatechin (EC), and (-)-epigallocatechin (EGC), essential oils, hematoxylins, phenolic glycosides, saponins, and a good amount of gallic acid. , procyanidin B2, leukocyanidin and epiphasylchein-(4β→8)-epicatechin, kaempferol, octacosanol, have been reported from the plant. These compounds are widely distributed in plant-derived foods and herbal medicines. (+)-catechins are well-known flavonoids for antioxidant activity and are also used for the symptomatic treatment of many gastrointestinal, respiratory and vascular diseases. Chemical analysis of bark, root, leaf, and flowers indicates a wide range of compounds including glycosides, tannins, flavonoids, steroidal glycosides, saponins, carbohydrates, proteins, etc. In addition, the bark contains tannins, catechols, flavonoids, sterols Is. Glucosides, saponins, carbohydrates, alkaloids, leukopelargonidin, and leukocyanidins. Other organic calcium compounds, which contribute to its medicinal properties as a 'female tonic'. Chemical examination found the presence of β-sitosterol, flavonoids, flavone glycosides, anthocyanins, fixed oil in the flower. The seeds have been reported to contain various fatty acids such as oleic, linoleic, palmitic, and stearic acids and the pods contain oleic, linoleic, palmitic, and stearic acids, catechol, epicatechol and leucocyanidae. The leaves contain quercetin, βsitosterol, gallic acid and ellagic acid, quercetin-3-O-α-Lrhamnoside, kaempferol 3-O-α-Lrhamnoside, amyrin, ceryl alcohol and. The stem contained quercetin, quercetin-3-O-α-Lrhamnoside, kaempferol 3-O-α-Lrhamnoside, amyrin, ceryl alcohol and

βsitosterol. It is used as anti-estrogenic activity against spasmogenic, oxytocic, uterotonic, antibacterial, anti-implantation, anti-tumor, anti progestational, menorrhagia, and anti-cancer agent. These components are believed to give the plant its distinctive medicinal properties.

Materials and Methods

In this review, we have researched papers from 2000 to 2021, taken from Jaurauls PubMed, Elsevier, Springer, and Other Internationally. In this paper, we have seen that photochemical, antibacterial, antifungal and antioxidant are present.

Phytochemical Analysis

Phytochemical analysis on extracts of leaves, bark and flowers of Saraca Ashoka revealed the presence of components that are known to exhibit medicinal as well as physiological activities. Preliminary phytochemical screening of leaves, bark and flower of Sarca ascoca was performed with petroleum benzene, water, ethanol, diethyl ether and acetone. The bark, leaves, seed, root and flowers of Sarca ascoca contain various phytochemical constituents such as carbohydrates, flavonoids, saponins, phenols, tannins, glycosides and steroids.

Qualitative Analysis: Phytochemicals, also known as secondary metabolites, are biologically active, which have many health benefits. Qualitative analysis of various plant extracts (bark, flowers and leaves, seed, root) was performed for alkaloids, flavonoids, glycosides, saponins, phenols, steroids, tannins and triterpenoids. Methanol, ethanol and aqueous extracts of bark, flowers and leaves, seed, root all contain phytochemicals such as flavonoids, glycosides, saponins, phenols, steroids, tannins and triterpenoids. Phenols are widely distributed secondary metabolites of plants and have important effects on plants such that they act as flower pigments and protect plants from invading agents. Flavanoids have a strong history in Ayurvedic medicine and have various uses for skin protection, normal brain function, maintaining blood sugar levels and regulating blood pressure. Tests confirmed the presence of common components such as lipids, steroids, glycosides, flavonoids, tannins and phenolic compounds.

Quantitative Analysis: determination of phytochemical constituents for powdered plant material by various standard methods and found that alkaloids ,flavonoids , Phenol and saponins ,were present in Sarca asoca . Phenol has many beneficial effects on human health. Apart from this, phenol derivatives are also used to prepare cosmetics like sunscreen, hair coloring etc. The order of phenol content was chloroform < petroleum ether < distilled water < ethanol < methanol mg Ga/. yes respectively. Methanol is a good solvent for the extraction of phenol.

Microorganisms

The antibacterial and antifungal activity was tested used two bacterial strains (E. coli and B. subtilis) and two fungal strains (Aspergillus niger and Aspergillus fumigatus).

Antibacterial Activity - Activity against bacteria Methanolic and acetonic extracts of Sarca ascoca were tested using the disc diffusion method for antibacterial activity (Sardari et al., 1998). E.coli and B. subtilis were inoculated with acetonic and methanolic extracts and placed on filter paper discs (6 mm in diameter). Autoclaved distilled water served as the control. Results were visualized in terms of the zone of inhibition after a 24-hour incubation period at 370°C. The diameter of the spheres is given in millimeters. The order of activity towards gram negative bacteria is flower> bark> leaf and for gram positive bacteria the order is bark> flower> leaf.

Antifungal activity - The disc diffusion method was used to determine the antifungal activity of methanolic and acetonic extracts of Sarca ascoca (Mahesh and Satish, 2008). Aspergillus niger and Aspergillus fumigatus are two different species of aspergillus. Filter paper discs (6 mm) impregnated with acetonic and methanolic extracts were placed on test organism seeded plates. The organisms employed for testing were Aspergillus niger and Aspergillus fumigatus. Autoclaved distilled water served as the control. The findings were visualized in terms of the zone of inhibition after a 24-hour incubation period at 280°C. In millimeters, the zones' diameter was measured. Aspergillus niger was also prominent in increasing the leaf area of the plants. Aspergillus niger for large-scale propagation of Ashoka for commercial use as this tree species is a good source of medicinal compounds. These fungi are for use as pharmaceutical drugs.

Antioxidant

The antioxidant activity of the extract was determined using the DPPH radical-scavenging assay, which showed a potent effect with an IC50 of 25 lg/ml. By scavenging free radicals, antioxidants may confer resistance to oxidative stress. Free radicals are chemical entities with one or more unpaired electrons that can exist in their state. Lipids, proteins, and DNA are all vulnerable to free radical damage. Antioxidants scavenge the DPPH radical by donating protons that make up the reduced DPPH. One of the different techniques for evaluating antioxidant activity is proton radical scavenging. As the radical scavenging activity along the free radical barrier rises, the color changes from purple to yellow. The color change revealed the antioxidant's potency. Plant tissues with high phenol and flavonoid content may have higher antioxidant activity. Antioxidants, because phenolic substances are effective hydrogen donors. Methanol was utilized as control and ascorbic acid was used as an antioxidant standard. The number of ascorbic acids is used to analyze antioxidant activity. The crude metabolite's free radical scavenging activity against DPPH at various doses. The following equation was used to determine the percent inhibition. DPPH radical scavenging activity (percentage) = [(Absorbance of control –Absorbance of the sample)/Absorbance of control]/Absorbance of control] 100

Conclusion

In this review, The use of herbal medicine has always been a part of human culture, as some plants have important therapeutic properties that can be used to cure human diseases. Some active compounds are also found in S.asoca which can be used as a good antibacterial, antifungal, antioxidant agent. Phytochemical

studies of different extracts (bark, flower, leaves, seeds and root) in investigation revealed the presence of all secondary metabolites in different extracts and some compounds were also quantitatively estimated (flavonoids and phenols), methanol extraction proved to be the best. Solvent system for all parts of Asoka. Phytochemicals are known to protect plants but recent research shows that they also protect humans from diseases and are very useful for maintaining human health. Phenols and flavonoids are widely distributed plant phytochemicals that protect plants from various diseases. Microorganisms were present within the limits of the Ayurvedic Pharmacopoeia of India. These observations will be of immense value in botanical identification and standardization of the drug in its crude form. Antimicrobial activity against some human pathogenic bacteria. Therefore studies on safety and efficacy should be carried out for use as these fungicidal drugs. Antibacterial activity against various microorganisms. Ashoka has many medicinal uses and is also a non-toxic traditional medicinal plant. Antioxidants This is valuable information for pharmaceutical formulations in the pharmaceutical industry and emphasizes the need for more in-depth research as they play a great role in healthcare.

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