

Plants Having Anthelmethic Activity: A Review

S. Sreeremya¹, R. Hemalatha^{2*}

¹Department of Biotechnology, Sree Narayana Guru College, Coimbatore, Tamil Nadu, India

²Department of Biotechnology, Bharathiyar University, Coimbatore, Tamil Nadu, India

ABSTRACT

An herb is a plant that is esteemed for flavour, aroma, or different qualities. Herbs are used in cooking, as medicines, and for spiritual purposes. From old days to now a day, medicinal plants are a potential and valuable for the treatment of several diseases and disorders. Main reason behind of that is medicinal plants is not having any side effects. This paper gives information about the plants which has antihelmenthic properties.

Keywords: diseases, herbs, medicinal plants, treatments

***Corresponding Author**

E-mail: mercyhemarv@gmail.com

INTRODUCTION

Herbal medicine is a major component in all traditional medical systems, and a common element in Siddha, Ayurvedic, Homeopathic, Naturopathic, Traditional Chinese medicine, and Native American medicine [1]. Plant materials are availed throughout developed and developing countries as home remedies, over-the-counter drug products and raw materials for the pharmaceutical industry, and represent a substantial proportion of the global drug market.

Anthelmintic Activity Assessment of *Melanthra albinervia*, *Conyza sumatrensis* and *Cyperacium nathera*

The anthelmintic movement of three medicinal plants in particular *Melanthra albinervia* (Asteraceae), *Conyza sumatrensis* (Asteraceae) and *Cyperacium nathera* (Cyperaceae) used in Kalemie and its surroundings against the gastrointestinal parasites beside the therapeutic effect of the ivermectin. Each plant dried away from the sunlight, crushed and 30 g of each drug is administered to goats [2], *in vivo*, to assess the therapeutic impact by differentiating

the decrease of the eggs number per gram of faeces in the gathering of goat treated by ivermectin and the untreated gathering.

Anthelmintic Activity of *Helicteres Isora* Linn. Fruit Extract

Helicteres isora Linn. (Sterculiaceae), considered as one of the botanical source of *Murva* in Punjab, commonly named as *Mrigshringa* in Sanskrit is a large shrub or small tree, occur often gregariously, throughout India and in dry deciduous forests, up to 1500 m on the hill slopes. *Murva* is used in several Ayurvedic formulations as an ingredient for the treatment of intermittent fever, abdominal colic, laxative, urinary diseases, pruritus, diabetes mellitus, Helmenthiasis, epilepsy, piles, typhoid, sterility, rigidity in lower limbs and skin diseases. *Helicteres isora* Linn. (Sterculaceae), a large shrub or small tree up to 5 m in height grows throughout India, in forests as under growth Root and Bark of *Helicteres isora* Linn have potential antihyperlipidemic activity. The fruit of *Helicteres isora* Linn has isorinic acid, rosmarinic. The root and stem barks are utilized as expectorant, demulcent, astringent and anti-galactagogue and are

useful in colic, scabies, empyema, gastropathy, diabetes, diarrhoea and dysentery. The fruits are astringent, acid, refrigerant, demulcent, constipating, stomachic, vermifuge, vulnerary, haemostatic and urinary astringent [3]. They are compelling in the critical states of pitta ophthalmitis, flatulence, diarrhoea, dysentery, diarrhoea, verminosis, wounds, ulcers, haemorrhages, epistaxis and diabetes. The plant genus consists of 45 species distributed in warmer regions of hemispheres; four species are reported to exist in India.

ANTIHELMENTHIC ACTIVITY

C. rotundus L. (Family-Cyperaceae), or purple nutsedge or nutgrass, is a perennial weed with slender, scaly creeping rhizomes, bulbous at the base and arising singly from the tubers which are about 1–3 cm long. The tubers are externally blackish in colour and reddish white inside, with a characteristic odour [4]. The stems develop to up to 25 cm tall and the leaves are linear, dark green and notched on the upper surface. Inflorescences are small, with 2–4 bracts, comprising of tiny flowers with a red-brown husk. The nut is three-angled, oval applanate, yellow in colour and black when ripe. *C. rotundus* is indigenous to India, but is now seen in tropical, subtropical and temperate regions.

According to the Ayurveda, *C. rotundus* rhizomes are considered astringent, diaphoretic, diuretic, analgesic, antispasmodic, aromatic, carminative, antitussive, emmenagogue, litholytic, sedative, stimulant, stomachic, vermifuge, tonic and antibacterial. It may be an excellent remedy for indigestion in the light of constituents present in it, for example, there are many enzymes for carbohydrates and minerals which act as catalyst for various biochemical reactions and helps indigestion. It is also useful for dietary management of psychotic diseases and metabolic disorders [5]. They are

available in treatment of Nausea and vomiting, dyspepsia, colic, flatulence, diarrhoea, dysentery, intestinal parasites, fever, malaria, cough, bronchitis, renal and vesical calculi, urinary tenesmus, skin diseases, wounds, amenorrhoea, dysmenorrhoea, deficient lactation, loss of memory, insect bites, food poisoning, indigestion, nausea, dysuria, bronchitis, and infertility.

***Momordica charantia* or Bitter Melon**

Momordica charantia or bitter melon, also known as balsam pear or Karela, is a Tropical vegetable, is a common food in Indian cuisine and has been used extensively in folk medicine as a remedy for diabetes. The Latin name *Momordica* means “to bite” (referring to the jagged edges of the leaf, which appear as if they have been bitten). In Ayurveda, the fruit is considered as tonic, stomachic, stimulant, emetic, antibilious, laxative and alterative. Bitter melon has been available in various Asian traditional medicine systems for a long time. Like most bitter-tasting foods, bitter melon stimulates digestion. This helps people with sluggish digestion, dyspepsia, and constipation; it can sometimes make heartburn and ulcers worse. The way that bitter melon is additionally a demulcent and in least mild inflammation modulator, in any case, implies that it once in a while has these negative impacts, in view of clinical experience and conventional reports.

Cloves (*Syzygium aromaticum*)

Cloves (*Syzygium aromaticum*) are the aromatic dried flower buds of a tree in the Myrtaceae family and Cinnamon (*Cinnamomum zeylanicum*) bark are common Indian spices with enormous medicinal value [6]. This study examines *in vitro* anthelmintic activity of aqueous extracts of *S. aromaticum* (floral buds) and *C. zeylanicum* (bark). Phytochemical tests of the extracts of *S. aromaticum* and *C. zeylanicum* revealed the presence of alkaloids, tannins, phenolics,

phlobatannins, cardiac glycosides, anthraquinone glycosides, hydroxyl anthraquinones, flavonoids and terpenoids. Aqueous extracts of *S. aromaticum* and *C. zeylanicum* were analysed for anthelmintic activity against Indian earthworm *Pheretima posthuma*. Albendazole (10 and 20 mg/ml) was used as a reference standard. Various concentrations (5, 10 and 20 mg/ml) of both plant extracts were tested and results were expressed in terms of time taken for paralysis (PT) and death (D) of worms. The intensity of the above concentrates was observed to be contrarily relative to PT and D. Dose dependent activity was observed in the plant extracts. At higher dose of 20 mg/ml *C. zeylanicum* showed significant activity as compared to *S. aromaticum* [7].

ANTHELMINTIC ACTIVITY OF RHIZOME EXTRACTS OF *CURCUMA LONGA* AND *ZINGIBER OFFICINALE* (ZINGIBERACEAE)

Helminthes are the common infections in man, affecting a large proportion of the world's population. Parasitic diseases may cause chronic morbidities including lymphatic filariasis (a cause of elephantiasis), onchocerciasis, and schistosomiasis. Development of resistance to most of commercially usable anthelmintic became a severe problem worldwide. *Curcuma longa* and *Zingiber officinale* rhizomes are rich for phytoconstituents viz. alkaloids, saponins, flavonoids, terpenes and steroids. These drugs are widely used in the treatment of different ailments in the Indian system of medicine. *Curcuma longa* Linn. (Zingiberaceae) is commonly known as "Haldi" in Hindi, is a perennial plant having a short stem with large oblong leaves. It bears ovate pyriform or elliptical, ovate or round and hollow rhizomes, which are branched and brownish-yellow in colour [8]. Externally the drug is yellowish brown in colour with unique odour and slightly pungent bitter in taste.

Root scars and annulations are present on the surface of the rhizome. The fracture is horny and internal surface is orange in colour. Its oil has a great significance in medicine. It consists of essential oil (5%), alkaloid, starch grain, yellow matter curcumin (5%) a polyphenol, which is the active substance of turmeric. Its systematic chemical name is (1E, 6E)-1,7-bis(4-hydroxy-3-methoxyphenyl)-1,6-heptadiene-3,5-dione. It contains turmeric oil (5–8%), coporic acid (1%) as a free acid and veleric acid (0.1%) as combined acid. It is used as analgesic, antibacterial, antioxidant, expectorant and flavouring agent [9]. The rhizomes are used for the treatment of inflammation as a household remedy on empirical basis. It is commonly cultivated in Ceylon, Belgium, Indonesia, France, and in South India and Bengal.

Zingiber officinale Linn. (Zingiberaceae)

Zingiber officinale Linn. (Zingiberaceae), usually known as "Adrak," is an herbaceous rhizomatous perpetual plant, coming to up to 90 cm in stature under cultivation. Rhizomes are observed to be aromatic, thick lobed and pale yellowish in colour. Leaves are long and 2–3 cm wide with sheathing bases, basic, substitute, distichously narrow, elliptical and lanceolate [10]. The herb develops several lateral shoots in clumps which starts to dry when the plant matures. Inflorescence is single, parallel radical, pedunculate, elongated and has tube shaped spikes. Flowers are uncommon, rather little, calyx predominant, gamosepalous, three toothed and open part on one side. Corolla is of three sub break even with elliptical to lanceolate connate greenish fragments. It for the most part contains up to 3% of volatile oil, a blend of 24 constituents containing monoterpenoid fraction (β -phelladrene, cineol, and citral). And sesquiterpenoids (β -sesquiphellandrene, bisabolene and farnesene), with (–)-zingiberene. It also contains 5–8%

resinous matter, starch and mucilage. It is reported to have antioxidant, analgesic and antipyretic properties. Ginger oil has been shown to prevent skin cancer in mice. The gingerols, a dynamic constituent of ginger oil has exhibited to kill ovarian tumour cells. The world producers of *Zingiber officinale* are Piji, India, Nigeria, Sierra Leone and China. Based on the traditional uses and scientific reports, both plant concentrates were chosen to assess their anthelmintic activity utilizing Indian earthworm as model [11].

IN VITRO ANTHELMINTIC ACTIVITY OF *FICUS BENGHALENSIS*, *FICUS CARICA* AND *FICUS RELIGIOSA*

The historical backdrop of home grown prescription is as old as human progress. The plants are known to give a rich mass of natural anthelmintics, antibacterials and insecticides. There are more than 800 species and 2000 assortments of *Ficus* family, the vast majority of which are local to old world tropics. Medicinal plants have served through the ages, as a constant source of medicaments for the exposure of variety of diseases. The history of herbal medicine is as old as human development.

The plants are known to give a rich mass of natural anthelmintics, antibacterials and insecticides. There are more than 800 species and 2000 assortments of *Ficus* family, the vast majority of which are local to old world tropics. *Ficus benghalensis* (Banyan tree), *Ficus Religiosa* (Pipal tree) and *Ficus carica* (Anjir tree) are some of the commonly occurring trees of this genus belonging to family Moraceae. *F. benghalensis*, *F. religiosa* and *F. carica* were reported to have anthelmintic potential. Various extracts of roots of *F. benghalensis* were found not only to paralyze (Vermifuge) but also kill the earthworms (Vermicide). Stem and bark extracts of *F. Religiosa* proved toxic to *Ascaridia galli* in vitro. Methanolic extract of bark of *F. Religiosa* was 100% lethal to

Haemonchus contortus worms. The latex of some species of *Ficus* (Moraceae) i.e. *F. inspida* and *F. carica* was also reported to have anthelmintic activity [12]. Based on this a study has been made to compare and evaluate the anthelmintic potency of aqueous extracts of fruits of *F. benghalensis*, *F. religiosa* and *F. carica*.

IN VITRO ANTHELMINTIC ACTIVITY OF *ACORUS CALAMUS* LEAVES

Parasitic infection including Helminthiasis is a serious problem in the tropical regions including the Asian countries which affects more than 2 billions of people worldwide. Helminths produce serious problem in human and other animals around the world specifically to the third world countries. Different type of helminths infects the human and animals out of which intestinal round worms (*Ascaridia* sp.) are most known [13]. Approximately 300 million people suffer severe morbidity associated with these parasites and half of which are school-going children affected by massive infections [14]. Variety of clinical symptoms arises due to this infection include dysentery, diarrhoea, nausea-vomiting, loss of appetite and weight, acidity and sometimes anaemia. Other features of helminthic infections include respiratory symptoms, dermatological consequences and epilepsy as a result of neurocysticercosis. Helminthic infections may also subvert immune responses to pathogens of other diseases such as tuberculosis, HIV, and malaria [15].

Acorus calamus broadly known as “Vacha” having a place with the family Araceae is a volatile oil containing thick herb or therapeutic plant. The plant has a stretched and aromatic root or rhizome from which raise its long erect takes off. The roots have a sweet aroma and the leaves smell like lemon. They are sharp pointed and have a ridged midrib running their entire length. The different parts of

this plant are available traditionally as abortifacient, aphrodisiac, aromatic, carminative, diaphoretic, emmenagogue, febrifuge, hallucinogenic, analgesic and anti-inflammatory, odontalgic, sedative, stimulant, memory enhancer, stomachic, tonic, vermifuge, etc. Different parts of the plant have been subjected to exhaustive extraction and the isolated constituents were reported in the literature which includes Terpenoids, Steroids, Xanthones, Lignans, Flavones and traces of alkaloids. Whole plant parts containing volatile oil including leaves. β -Asarone is the major constituent in the leaves (27.4–45.5%), whereas acorenone is dominant in the rhizomes (20.86%) followed by isocalamendiol (12.75%).

Methyleugenol, cis-methylisoeugenol, β -asarone, geranylacetate, β -farnesene, shyobunone, epishyobunone and isoshyobunone are the most abundant chemical compounds which are present in 20% of the essential oil [16]. The juice of young leaves is available in the treatment of different diseases including in the different worm infections according to traditional Ayurveda and several other folk medical practices. Anthelmintic activity of the roots and rhizomes of this herb is already reported earlier [17]. The current study was aimed to investigate of the anthelmintic potential of crude MeOH extract, 50% EtOH and aqueous extract of the leaves of *Acorus calamus* in three different concentrations (25, 50, 100 mg/ml) on Indian earth-worm (*Pheretima posthuma*) taking Albendazole as a standard drug.

IN VITRO ANTHELMINTIC ACTIVITY OF CASEARIA VARECA ROXB

Ethyl acetate and Methanolic extracts from the leaves of *Casearia vareca* Roxb. (Flacourtiaceae) were analysed for their anthelmintic activity against adult Indian earthworm, *Pheretima posthuma* and

nematode, *Ascardia galli*. Various concentrations (10, 20, 50 mg/ml) of each concentrate were tried in the bioassay, which included assurance of time of loss of motion and time of death of the worms. Both the extracts exhibited anthelmintic activity at the highest concentration of 50 mg/ml [18]. Piperazine citrate (15 mg/ml) and Albendazole (20 mg/ml) were used as standard references while 0.5% carboxy methyl cellulose (CMC) in normal saline as control. *Casearia vareca* Roxb. (Flacourtiaceae) is a popular and socio-culturally recognized plant in Assamese community and is commonly known as *Chhagladoi* or *Sikrai*. The young leaves and shoots are edible and cooked as vegetable by Assamese people. The fruits are rubbed into a paste and given to people suffering from worms, while the juice of the fruits is dropped into the ear when attacked by ticks. The plant is noted in the Dictionary of Indian Folk Medicine and Ethnobotany and use for worm infection, earache, fever, headache, vermifuge and as anticancer. Assamese people avail this plant leaves traditionally to treat various diseases, like injuries, burns, abscess, pain, and in worm infection [19].

Helminthiasis is a full scale parasitic worm illness of people and creatures in which a piece of the body is tainted with parasitic worms, for example, pinworm, roundworm, or tapeworm.

FACTS ABOUT HELMINTHIASIS

Helminthiasis is a macroparasitic worm disease of humans and animals in which a part of the body is tainted with parasitic worms, for example, pinworm, roundworm, or tapeworm. It is one of the common infections in mankind affecting a large proportion of the world population. Parasitic diseases may cause chronic morbidities including lymphatic filariasis and onchocerciasis. Anthelmintics are medications that may demonstrate locally to expel worms from the

gastrointestinal tract or systemically to annihilate grown-up helminths or advancement frames that attack organs and tissues. Chemotherapy is the majorly used effective tool to cure and control helminth infection, as effective vaccines have not been developed so far. Use of the existing drugs causes adverse effects and made the parasites to develop drug resistance. Development of resistance to most of the commercially available anthelmintics became a problem world-wide. These factors paved the way for herbal remedies as an effective alternate anthelmintics [20]. These days modern research focuses on phyto remedies to overcome adverse effects and drug resistance problems. A number of medicinal plants have been availed to treat parasitic infections in man and domestic animals.

Therefore, an attempt has been made to evaluate anthelmintic activity of *S. aromaticum* floral buds and *C. zeylanicum* bark on adult earthworm *Pheretima posthuma*. From time immemorial, medicinal plants have been an indispensable source for treating a variety of ailments and acquired global importance. Indigenous medicines like Ayurveda, Siddha and Unani deploy several herbal ingredients. Cloves (*Syzygium aromaticum*) are the aromatic dried flower buds of a tree in the family Myrtaceae. Cloves are utilized as a part of Indian ayurvedic pharmaceutical, Chinese medicine, and Western herbalism. The clove tree is an evergreen that develops to a height going from 8 to 12 m, having substantial leaves and sanguine flowers in various gatherings of terminal clusters. The floral buds are at first of a pale colour, gradually become green and develop into bright red at maturity [21].

Drugs and Chemicals

Albendazole procured from Ranbaxy pharmaceuticals Ltd. was used as reference standard for anthelmintic activity.

CONCLUSION

Helmenthiasis caused by nematode, this nematode cause's serious illness to mankind. This paper reviews about the plants and part of the plants which have the antihelmenthic properties.

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