

## REVIEW ARTICLE

## Ethnobotanical Survey on Anthelmintic Plants - A Review

Agrawal Richa\*, Neetesh K Jain, Shriyans Jain, Sagarmal Soni, Anil Burman,  
Mohd.Rizwan Khan

Oriental College of Pharmacy and Research, Oriental University, Indore (M.P), India

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**ABSTRACT**

Helminthiasis is a macro parasitic disease of humans and animals in which a part of the body is infested with parasitic worms such as pinworm, roundworm and tapeworm. 35% of patients those are suffering from worm disease in India, in 35% patients 85-95 % are Children. Various synthetic drugs are present in markets which are used in the treatment of worms disease but they have lots of side effect, so that we used the herbal plants for treatment of worm disease. In this review we studied the various plants extracts (phenolic, methanolic, ethanolic, acetone, etc.) which are used in the treatment of worms disease these plants are reported from year 2010-2011. These plants extract are treated the worms diseases carefully without any side effects. Name of plants which are study in this review: *Coriandrum Sativum*, *Cassia Auriculata*, *Cinnamomum Camphor*, *Cyperus Tegetum*, *Symplocos Racemosa*, *Castor Oil*, *Neolamarckia Cadamba*, *Mentha Piperita*, *Juglans Regia*, *Cassia suma*, *Artemisia Herba-Alba*, *Ixora Coccinea*, *Coccinia Indica*, *Caesalpinia Bonducella*, *Bauhinia Racemosa*, *Musa Paradisiaca*, *Aerva Lanata*, *Camellia Sinensis*, *Bauhinia Purpurea*, *Acanthospermum Hispidum*, *Enicostemma Littorale*, *Pistia Stratiotes*, *Gloriosa Superb*, *Mitragyna Parvifolia*, *Acacia Nilotica*, *Citrus Medica*, *Corallocarpus Epigaeus*.

**Key words:** Anthelmintic activity, roundworm, tapeworm, pinworm, extract of plants.

**INTRODUCTION**

In Human intestinal Helminths are among the most common infections occurring throughout the developing world. These infections have been associated with low standard of sanitation, and between 500 million and one billion people are estimated to be infected annually worldwide. There are several reports from various parts of Nigeria on human intestinal helminths<sup>[1]</sup>. The World Health Organization reports a 35 percent rate for roundworm infection, which is a common parasitic worm. Infestation can cause morbidity, and sometimes death, by compromising nutritional status, affecting cognitive processes, inducing tissue reactions, such as granuloma, and provoking intestinal obstruction or rectal prolapsed. Although worms can cause serious infection, some scientists are studying the use of helminthes to eliminate and treat irritable bowel diseases. Still, the eradication of helminthes in developing countries, especially in children, remains a significant task for organizations around the world<sup>[2]</sup> Total 80 medicinal plants were

collected and identified as belonging to 46 families and 70 genera. The plants identified were 48%, 38%, 7%, 6% and 1% trees, shrubs, herbs, lianas and lichens, respectively. Most of the plants belonged to the families Fabaceae (10%), Euphorbiaceae (6%), Rutaceae (5%) followed by Boraginaceae, Labiateae, Rubiaceae, and Solanaceae at 4% each. However, the six most important families by their medicinal use values in decreasing order were Rhamnaceae, Myrsinaceae, Oleaceae, Liliaceae, Usenaceae and Rutaceae.

The most frequently used plant anthelmintics were *Albizia anthelmintica* (Fabaceae), *Myrsine africana* (Myrsinaceae), *Rapanea melanophleas* (Myrsinaceae), *Clausena anisata* (Rutaceae) and *Olea Africana* (Oleaceae) used by 70%, 70%, 26%, 13% and 9% of the respondents, respectively. Other plant anthelmintics used, each by 4% of the respondents, were *Rumex usambarensis* (Polygonaceae) and *Salvadora persica* (Salvadoraceae)<sup>[3]</sup>.

**Coriandrum sativum:**

*Coriandrum sativum* is popularly known as coriander in India belongs to family Apiaceae. *In-vitro* anthelmintic potency of the ethanolic extract and carbon tetrachloride extract of *Coriandrum sativum* plant using Indian earthworms. The various concentrations (50, 100, and 150 mg/ml) of the ethanolic extract and carbon tetrachloride

extract were tested *in-vitro* for anthelmintic potency by determination of time of paralysis and time of death of worm. Piperazine citrate used as standard. Thus the present study demonstrate that the *Coriandrum sativum* as an anthelmintic has been confirm as the ethanolic and carbon tetrachloride extracts of whole plant displayed activity against the earthworm used in study<sup>[4]</sup>.



*Coriandrum sativum*



*Symplocos racemosa*



*Juglans regia*



*Cassia auriculata*



*Castor oil*



*Cassia suma*



*Cinnamomum camphor*



*Neolamarckia cadamba*



*Artemisia Herba-alba*



*Cyperus tegetum*



*Mentha piperita*



*Ixora coccinea*

**Symplocos racemosa:**

*Symplocos racemosa* belongs to the family Symplocaceae. Leaves often turning ye-llow when dry, alternate, coriaceous. *Symplocos racemosa* bark successive extract was screened for its phytochemical and

anthelmintic activity. Preliminary phytochemical activity revealed the presence of alkaloids, steroids, terpenoids, flavanoids and tannins. The present investigation reveals that the ethanolic extract was endowed with potent anthelmintic

property as compare to other extract. Potency of the extracts was found to be inversely proportional to the time taken for paralysis / death of the worms. The activities were comparable with the reference drug Piperazine, Albendazole <sup>[5]</sup>.

#### ***Juglans regia:***

*Juglans regia*, the valuable species from Juglandaceae family has a long history of traditional use as an anthelmintic. Present study is an attempt to evaluate anthelmintic activity of different extracts of stem bark of *J. regia* L. Different concentrations of ethyl acetate, acetone, ethanol, methanol and aqueous extracts of the plant material were tested against *Eicinia foetida* as test worms. Demonstrated paralysis and also caused death of worms in dose dependent manner as compared to standard Albendazole. Ethanolic extract shows quite weak anthelmintic effect. It clearly indicates that the crude acetone and methanolic extracts significantly <sup>[6]</sup>.

#### ***Cassia auriculata:***

The plant *Cassia auriculata* belongs to the family Caselpinaceae.

Literature survey reveals that leaves of *C. auriculata* L are useful in treatment of anthelmintic activity. The anthelmintic activity of quath extract of the leaves is reported. The plant is reported for the presence of poly-phenolic compounds .anthelmintic activity, chemically tannins are polyphenolic compounds. The present study investigates the anthelmintic activity of the leaves for the different extracts with a view to justify the use of the plant in the treatment of helminthes. Another possible anthelmintic effect of tannins is that they can bind to free protein in the gastrointestinal tract of host animal or glycoprotein on the cuticle of the parasite and cause death <sup>[7]</sup>.

#### ***Ricinus communis:***

*Ricinus communis* belongs to the family Euphorbiaceae. The anthelmintic activity of castor oil using adult earthworm, *Pheritima posthuma* Albendazole was taken as standard drug and different concentrations were prepared in normal saline containing 5% DMF castor oil was prepared at different concentrations were prepared by dissolving in minimum quantity of DMF initially and making up to the final volume with normal saline to obtain various concentrations. One of the groups is taken as control group which was treated with normal saline containing 5%. The oils were tested at different concentrations for the determination of

paralysis time and death time of the earthworms <sup>[8]</sup>.

#### ***Acacia suma:***

*Acacia suma* (Roxb) Family-Fabaceae is a medium sized erect tree. The study was under taken investigate phytochemical screening and anthelmintic activity of bark of *Acacia suma*. The Activities on Various concentrations of each extract along with the reference samples were subjected for anthelmintic activity study. The qualitative test revealed that the petroleum ether extracts contained only terpenoids but chloroform and hydro-alcoholic extracts exhibited the presence of carbohydrates, alkaloids, glycosides, flavonoids, tannins and saponins but amino acids and steroids were absent. All the extracts showed anthelmintic activity when compared with petroleum ether and chloroform extracts <sup>[9]</sup>.

#### ***Cinnamomum camphora:***

*Cinnamomum camphora*, Family Lauraceae. The aqueous extract of *Cinnamomum camphor* Leaves was investigated for anthelmintic activity using earthworms, tapeworm and roundworms. Various concentrations (10-70 mg/ml) of plant extract were tested in the bioassay. Piperazine citrate (10 mg/ml) was used as reference standard drug whereas distilled water as control. Determination of paralysis time and death time of the worms were recorded. Extract exhibited significant anthelmintic activity at the concentration of 50 mg/ml. The result shows that aqueous extract possesses vermifugal activity and found to be effective as an anthelmintic <sup>[10]</sup>.

#### ***Neolamarckia cadamba:***

*Neolamarckia cadamba* Bosser belongs to the Family: Rubiaceae. The anthelmintic activity of the roots of *N. cadamba*. Various extracts of *Neolamarckia cadamba* barks possess anthelmintic activity in a dose dependant manner. Potency of the test samples was found to be inversely proportional to the time taken for paralysis/death of the worms. The activities were compared with the reference drug Piperazine citrate. The Among tested extracts, like chloroform extract and petroleum ether extract were found to possess potent anthelmintic activity while methanol extract showed moderate activity <sup>[11]</sup>.

#### ***Artemisia herba-alba:***

*Artemisia herba alba* family Ascarididae, known as desert or white wormwood, known in Arabic as shih and in French as Armoise Blanche, is widely distributed in North Africa. It is used traditionally

by the Egyptians as a vermifuge in addition to its other medical and veterinary uses. Anthelmintic efficacy of crude aqueous extracts of *A. herbaalba*, in comparison to albendazole, ABZ, against *Heterakis gallinarum* infecting turkey poults. 60, 1day old large white turkey poults (males) were divided into four groups. Group 1 was neither infested nor treated. Groups 2, 3 and 4 were inoculated with 500 embryonated eggs of *H. gallinarum* [12].

#### ***Cyperus tegetum*:**

*Cyperus tegetum* Roxb family Cyperaceae is also commonly called as Madhur kathi. The present study was conducted to explore the anthelmintic activity of aqueous extract of rhizomes of the plant *Cyperus tegetum*. The various doses of extract were screened for their anthelmintic activities on adult Indian earth worms, *Pheretima post-huma*. The aqueous extract was found to show anthelmintic activity at 25 mg/ml concentration. The activity was comparable with the standard drug Piperazine citrate. The doses of aqueous extract of *Cyperus tegetum* showed better anthelmintic activity as compare to Piperazine citrate. When the dose of the extract was increased, a gradual increase anthelmintic activity was absorbed [13].

#### ***Mentha piperita*:**

*Mentha piperita* belongs to the family Lamiaceae. *Mentha piperita* has anthelmintic activity against *Pheritima posthumous*. Each extract was studied at 20 mg/ml, which involved determination of time of paralysis and time of death of the worms. Both the extracts of the plant exhibited considerable anthelmintic activities, and the order of sensitivity of the extracts to the worms was that chloroform extract of *M. piperita* showed the best anthelmintic activity when compared with acetone extract. Albendazole (20 mg/ml) and distilled water were included in the assay as standard reference drug and control, respectively. Chloroform extract of *M. piperita* showed the best anthelmintic activity [14].

#### ***Ixora coccinea*:**

*Ixora coccinea* Linn, Family Rubiaceae is a bushy, rounded shrub found in subtropical region of Florida. Plant is grown as ornamental plant in India. Flowers contain tannins, lupeol, fatty acids,  $\beta$ -sitosterols, cycloartenol esters and flavonoids4-8. Flowers show cytotoxic, hepatoprotective, anthelmintic activity. This work is to evaluate and compare anthelmintic activity of different extracts of *Ixora coccinea* roots. Earthworms were used for anthelmintic activity. Albendazole was used as

standard. Time required for paralysis and death of animals were noted for each sample. Chloroform extract show good anthelmintic activity than petroleum ether extract, ethyl acetate extract and methanol extract [15].

#### **CONCLUSION**

Ancient classical literature and ethnomedical surveys described the use of plants in traditional system of medicines for the treatment of helminthic infections. This traditional medical wisdom is excellent proof of clinical efficacy and safety of medicinal plants. Present report is a survey of literature indicating the screenings of crude plant extracts, essential oils and isolated active principles for in vitro and in vivo anthelmintic studies to substantiate the folk claim. To conclude, in future studies, there is need for thorough phytochemical, clinical and possible studies on molecular mechanism of action. At the same time efforts should be made to standardize the plant extracts with good anthelmintic activity and formulate best alternative herbal preparations to replace or complement the synthetic drugs which are currently in use [25]. There was an attempt to review the various Indian indigenous plant for anthelmintic activity. Here we have reviewed the botanical name, morphology of plant, chemical constituent and various extract of plant etc. of 50 plants. We also updated the plant which are using for the Anthelmintic Activity from 2010-2011. So this review provides a platform for the researcher and gives them an opportunity to prepare such herbal formulations.

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