

Anthelmintic Potential Of Aqueous And Organic Extract Of Seeds Of Samaneasaman (Merr)

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Abstract

The aim of this research study was to evaluate aqueous and organic extracts of seeds of Samaneasaman (Merr) for their anthelmintic activity using Indian adult earthworm *Pheretima posthuma*. Different concentrations of aqueous and organic extract ranging from 10 to 100 mg/ml were made and tested on said earthworm. These extracts were tested for bioassays which include time for paralysis and time for death of the worms. Aqueous as well as organic extract of seeds does not exhibit strong anthelmintic activity at concentration of 100 mg/ml. Lower concentrations also did not produce significant anthelmintic activity. The standard reference drug which is used for comparing anthelmintic activity of these extracts was piperazine citrate at concentration of 10 mg/ml. Both aqueous and organic extracts of seeds of Samaneasaman were evaluated for and showed no potential anthelmintic activity.

KEYWORDS Anthelmintic activity, Extraction, Piperazine citrate, Samaneasaman, *Pheretima posthuma*.

INTRODUCTION:

Helminthiasis is a worm infestation of humans and other animals even life stock and crops affecting health and food production respectively and has impact on global economic factor.¹ The worms which causes helminthiasis are called as helminths and the drugs which are used for treating helminthiasis are nothing but anthelmintics.² There are various types of worms such as hook worms, fluke worms, round worms, tape worms which causes helminthiasis. The names are given according to their shapes. The major organs which get affected in helminthiasis are stomach and intestine and major symptoms of severe helminthiasis include diarrhea, abdominal pain, general malaise and impaired cognitive development. Chronic helminthiasis by hook worm lead to intestinal bleeding and anemia.³ *Pheretima* is a genus of earthworms. *Pheretima posthuma* are long cylindrical shaped worms having length of 15-30 cm. they are mostly found in moist soil and responsible for vegetables and humus. Their life span is 3 to 10 years.⁴

Samanea Saman Merr (family *Fabaceae*) commonly known as rain tree is easily available and widely spread plant in the world. It is widely cultivated throughout Mediterranean region and all tropical regions including temperate, tropical and subtropical regions due to its higher commercial scale.

Scientific classification of Taxonomy Kingdom: Plantae, Order: Fabales, Family: Fabaceae, Genus: *Samanea Saman*, Species: *S. saman* and exhibits the synonym names of *Samaneasaman* such as *Albizia saman*, *Enterolobium saman*, *Inga saman*, *Pithecellobium saman*, and *Mimosa saman*.⁵

Downpour tree is effortlessly known for its qualities like umbrella-molded cover. Downpour tree is filled in the open and ordinarily arrives at 15-25m (50-80ft) in level. *Samaneasaman* is quite possibly of the main plant in the Pacific as an overhanging tree on little ranches and along street side regions in parks and field. The downpour tree is filled in the tropical climate and its wood has restricted need for cut bowls, make wood, and fuel wood. The leaves and cases of downpour tree are utilized as food because of the great nutritive substance and nitrogen

fixing capacity. A colossal number of purposes are recorded for Samaneasaman, it naturalizes liberally wherever it has been presented and is considered as a wrapping nuisance in Vanuatu and Fiji. The different restorative exercises of Samaneasaman have been accounted for.⁵

Morphology medicinal uses of parts of Samanea saman⁵

Leaves

Leaves are on the other hand organized alongside twigs and have a conspicuous enlarging at the petiole base. The size of the leaf is 2-4cm stretched and 1-2cm expansive. The biggest apical fliers and foliage are organized in 2-6 sets of pinnae and every pinna bearing 6-16 precious stone formed handouts and has a yarn like stipules present in the leaves. The state of the leaf seems to be sharp edges and is two times even pinnately intricate. The leaf contains velvety condition with a round organ. Lustrous green on the highest point of the leaf, meagerly bristly underneath in base and it looks dry and dull for a short period. The Samaneasamantrees are semi-deciduous and lose their leaves, during the time of summer. It is the justification for which it stays leafless for a period, yet immediately defoliate in the event that there is adequate dampness. This gives the appearance that Samaneasaman(rain tree)is "evergreen" in dampness environments. Solvents concentrate of Samaneasamanleaves restrains Mycobacterium tuberculosis and alkaloid part of the leaf is powerful on the (CNS) focal sensory system and fringe sensory system (PNS). A leaf imbue is utilized as a diuretic and for the runs.

Flowers

The blossoms of Samaneasamanare small. 12-25 blossoms For every head are massed, and it looks pinkish-red in variety; top of the bloom is 5-6cm transversely and 4cm in level. Blossoms are pinkish-red in above and white in inside and it gives the fluorescence furry. Blossoms have a plume duster or powder puff seems held somewhat over the foliage. Great many heads are conceived eat a similar time and covering the tree in pinkish bloom. Natural product decoction is utilized as a (CNS) focal sensory system - narcotic; Samaneasamanplant is likewise utilized for loose bowels, colds, migraine, digestive diseases, and stomach-throb, and torment, gastrointestinal infirmities treating the ulcer and draining problems

Fruits

Mature units (monkey cases) are blackish-brown in variety quadrilateral land its shape is straight or somewhat bowed. The size of the units is 10-20cm long and wide 15-19cm and it loaded up with earthy mash.

Bark

The bark of the full grown tree is dim, harsh fissured in lengthy plates. The inward bark is a light tone and harsh. On more youthful trees, the bark is smoother and pale dim to caramel in variety. It utilized for loose bowels and root is utilized for stomach disease. As of now, research is focused on utilizing leaves and bark of the plant and its organ insurance properties

Seeds

Seeds are stoutly elliptical ellipsoid, 8-11.5 mm (0.3-0.45 in) long, 5-7.5 mm (0.25-0.38 in) wide, somewhat leveled from one side to another, smooth, dim lustrous brown with a thinly U-molded yellowish checking (pleurogram) on the straightened sides. There are 15-20 seeds for every case (frequently just 5-10 seeds for each unit in the local reach, where seed predation by bugs represents the rest). One kilogram of seeds midpoints 4000-6000 seeds (1820-2730 seeds/lb). Seeds are promptly scattered by homegrown animals (steers, pigs, goats) and to a lot lesser degree by wild creatures (peccary, ungulate, and rodents in the assumed local reach), whose taking care of propensities and stomach related limit license not many seeds to go through flawless. Seeds are bitten for a sensitive throat. The antimicrobial movement of this plant has been accounted for against certain microbes that influence human and scarcely any plant pathogenic organisms and microorganisms Samaneasamanis likewise known to have cancer prevention agent, against plasmodial, and cytotoxic properties.

MATERIALS AND METHODS

Collection, authentication, drying and extraction of seeds of Samaneasaman⁶

The seeds of Samaneasaman were collected in the month of August from KrushiVigyan Kendra (KVK), Baramati, India. The seeds were authenticated from Department of Botany, Shardabai Pawar MahilaMahavidyalaya, Baramati, India and earth worms were identified from Department of Zoology, Shardabai Pawar MahilaMahavidyalaya, Baramati, India

Seeds which were gathered was handled into powder structure by the accompanying advances: 1) Screening of seeds: the chose seeds screened physically to eliminate terrible seeds, stones, unfamiliar materials, and so on; 2) Cleaning: for eliminating the residue or mud on the seeds, they were washed with refined water; 3) Drying: for a time of seven days, the seeds which were washed are dried; 4) Dehulling: the seeds which were dried should be dehulled. This was finished with the assistance of an electric blender; and 5) Crushing: dehulled seeds were ground into coarse powder structure.

For cleaning purpose, dirt and dust from the seeds are removed washed with flowing water and dried in shade for one month. After one month, seeds are finely powdered in domestic grinder. Powder is subjected to Soxhlet extraction (continuous hot percolation). For getting aqueous extract double distilled water is used and for getting organic extract petroleum ether was used. After 3 cycles of each, mixture is

subjected to rotary evaporation and solvent is recollected. Dried extract is removed by scratching method and collected in clean glass bottle. Dried extract is subjected to various preliminary chemical tests to detecting the presence of active phytochemical/constituents present in it.

Collection of animal and identification

Pheretimaphostuma of 6-9 cm length and weighing about 0.5 to 4 gms were collected at night from burrows of moist soil from farms of Baramati area and were authenticated from Zoology department, Shardabai Pawar MahilaMahavidyalaya, Baramati. After authentication they were used for anthelmintic activity. The reason behind selecting these worms is that they resembles by anatomy and physiology with intestinal worm parasite of human being. The worms were cleaned using saline solution before their use in activity.

Drugs and chemicals:

All chemicals used in the study are of analytical grade chemicals. 500 mg Avizine tablet(piperazine citrate) from Taj Pharmaceutical Ltd, Mumbai was used for preparing standard piperazine citrate solution. Tablet was dissolved in 50 ml double distilled water to get concentration of 10, 50 and 1000 mg/ml.

ANTHELMINTIC ACTIVITY⁷

The activity was carried out by using the method reported by Ajaiyeoba. Necessary changes were done in method as per requirement. 20 ml formulation containing three different concentrations of 10, 50 and 100 mg/ml of aqueous and organic extract of seeds of Samaneasamanand transferred in 6 different petri dishes.10 mg/ml piperazine citrate was prepared and transferred to different petri dish. Six Pheretimaphostuma worms of approximately same size and same length were placed in these petri dishes. Time for paralysis i.e. duration in which movement of worms stop is noted when petri dishes are shaken vigorously and also time of death i.e. period required for death worms is also noted which is confirmed by shaking petri dishes vigorously as well as by dipping petri dishes in hot water for few minutes. Piperazine citrate was used in concentration of 10 mg/ml as reference standard and distilled water was used as control.Results are expressed in mean \pm SEM of six worms in each group and are tabulated and graphically represented.

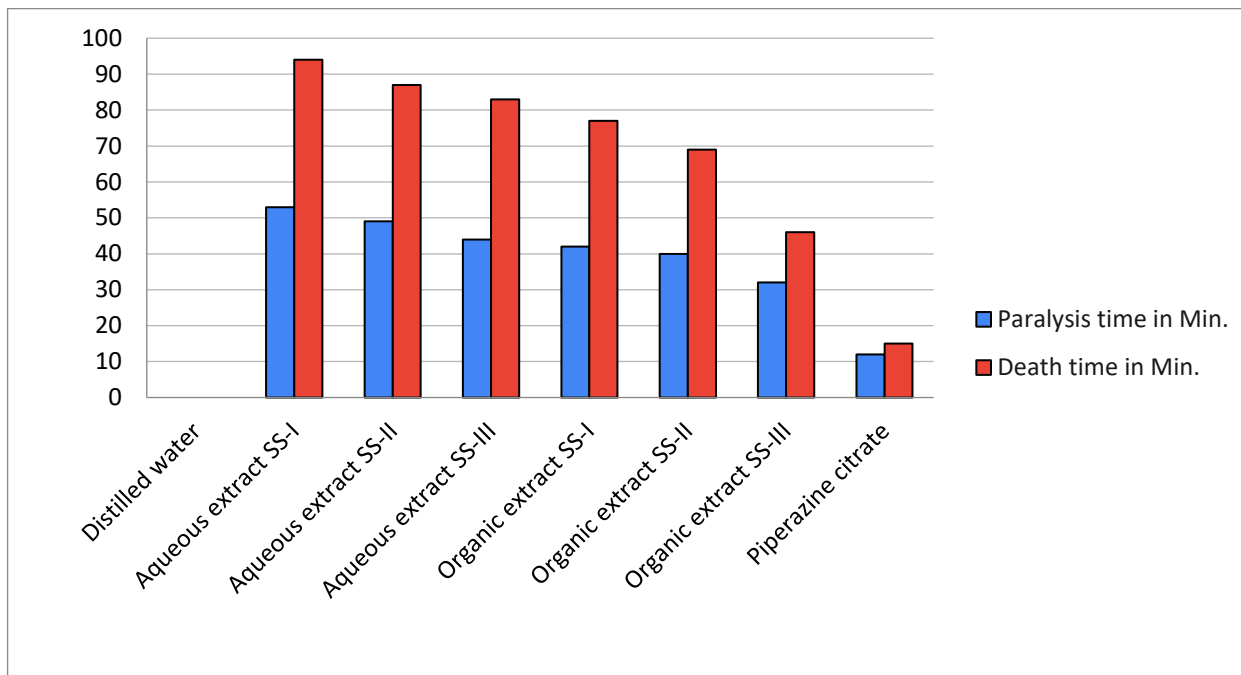
RESULTS

Table 1: Paralysis time & death time in min forSamaneasaman seed extract

Drug	Concentration	Paralysis time in Min.	Death time in Min.
Distilled water (Control)	--	--	--
Aqueous extract SS-I	10 mg/ml	53 \pm 0.2	94 \pm 0.5
Aqueous extract SS-II	50 mg/ml	49 \pm 0.1	87 \pm 0.6
Aqueous extract SS-III	100 mg/ml	44 \pm 0.4	83 \pm 0.7
Organic extract SS-I	10 mg/ml	42 \pm 0.4	77 \pm 0.8
Organic extract SS-II	50 mg/ml	40 \pm 0.6	69 \pm 0.2
Organic extract SS-III	100 mg/ml	31 \pm 0.7	45 \pm 0.9
Piperazine citrate	100 mg/ml	11 \pm 0.6	14 \pm 0.6

The function of the anthelmintic drugs like piperizine citrate is to paralyze the worms so that they are expelled in the faeces of animals and human. Aqueous and petroleum ether extracts seeds of Samaneasamandoes not showed the significant anthelmintic activity as compared to piperazine citrate (table 1). Concentration of organic extract at 100 mg/ml showed small amount anthelmintic activity.Other concentration does not show any significant anthelmintic activity. Reason for showing small anthelmintic activity by 100 mg/ml organic extract is may be dissolution of chemical constituents of seeds of Samaneasaman by petroleum ether. As per figure 1, petroleum ether extract of seedstook 31 \pm 0.7 min for paralysis of earthworm and death time is 45 \pm 0.9 min which is very longer time to produce pharmacological effect and is not useful to much extent while other concentrations of extracts do not paralyzed the worms indicating no anthelmintic activity. In comparison, piperazine citrate showed significant anthelmintic activity. Piperazine citrate paralyzed the works within 11 \pm 0.6 and death of worms occurs within 14 \pm 0.6 min which is very significant.

Figure No. 1: Anthelmintic activity of Samaneasaman seed extract



Values represent mean \pm SEM, One way ANOVA, $P < 0.0001$, followed by Dunnett's t-test, $**P < 0.01$

CONCLUSION

From the results it is evident that petroleum ether extract and aqueous extract of seeds of *Samaneasaman* does not have any potent anthelmintic activity as compared to piperazine citrate. From this study it can be concluded that, the seed extract of *Samaneasaman* is not useful as anthelmintic and for treatment of diarrhea and dysentery.

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