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Anthelminthic Activity of Saraswatha Churna -A Polyherbal Formulation

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Abstract: The present study was done with the aim to evaluate the anthelmintic activity of formulation containing traditionally used herbs viz., *Zingiber officinalis, Piper longum, Trychyspermum ammi, Acorus calamus, Glycyrrhiza glabra, Cuminum cyminum, Saussurea lappa* using adult earthworm *Pheritima posthuma* against Piperazine citrate (15 mg/mL) and albendazole (20 mg/mL) as standard references and normal saline as control. The time to achieve paralysis of the worms was determined.

Keywords: Saraswatha churna, Pheretima postuma, Piperazine citrate, Albendazole, Anthelminthic activity.

INTRODUCTION

Helminthiasis or infections with parasitic are pathogenic for human beings. worms Anthelmintics or antihelminthics are drugs that expel parasitic worms (helminths) from the human body.¹ Helminthic infections are now being recognized as cause of many acute as well as chronic ill healths among the various human beings. More than half of the population of the world suffers from infection of one or the other and majority of cattle's suffers from worm infections.² Treatment with an antihelminthic drug kills worms whose genotype renders them susceptible to the drug. Worms that are resistant survive and pass on their "resistance" genes. Resistant worms accumulate and finally treatment failure occurs. Intestinal worm infections in general are more easily treated than those in other locations in the body.³ Because the worms need not be killed by the drug and the drug need not be absorbed when given by mouth, there is usually a wider margin of safety than with drugs for worm infections in other sites. Indiscriminate use of synthetic anthelmintics can lead to resistance of parasites.⁴ Herbal drugs have been in use since ancient times for the treatment of parasitic diseases in human⁵ and could be of value in preventing the development of resistance.⁶ The objective of this study was to investigate the anthelminthic its activity.

METHODS AND MATERIALS

Saraswatha churna, a product of IMPCOPS, is an Ayurvedic preparation was purchased from Impcops, Pondicherry, India. Three concentrations (15 mg/mL, 25 mg/mL and 50 mg/mL) of Saraswatha churna were prepared in normal saline and used for this study.

Drugs and chemicals

Piperazine citrate (Noel, Mumbai) and Albendazole (Ranbaxy, New Delhi) were used as reference standards. Normal saline were used as control.

Anthelmintic Investigation

The anthelminthic activity was evaluated in adult earthworm (<u>*Pheretima posthuma*</u>) due to its anatomical and physiological resemblance with the intestinal round worm parasites of human beings^{7,8,9} using previously described procedure.^{10,11} Five groups of approximately equal sized Indian earthworms consisting of six earthworms in each group were released into 50 mL of desired solution. Each group

was treated with normal saline (control), Piperazine citrate (15 mg/mL), albendazole (20 mg/mL) and Saraswatha churna (15 mg/mL, 25 mg/mL and 50 mg/mL). Observations were made for the time of paralysis of individual worms. Paralysis assumed to occur when the worms did not revive even in normal saline.

Statistical analysis

The data obtained were expressed as mean \pm SEM. Statistical analysis were performed by one way analysis of variance (ANOVA) followed by student's t test. At 95% confidence interval, p values < 0.001were considered significant.¹²

RESULTS AND DISCUSSION

Saraswatha churna produced a potent anthelminthic activity against the <u>*P.posthuma*</u> when compared with reference standards (p < 0.001). This activity was concentration dependent. The potency was found to be inversely proportional to the time (Table 1) taken for paralysis of the worms.

The possible mechanism of the anthelminthic activity of Saraswatha churna cannot be explained on the basis of our present results. However, it may be due to its effect on inhibition of glucose uptake in the parasites and depletion of its glycogen synthesis. Saraswatha churna may also have activated nicotinic cholinergic receptor in the worms resulting in either persistent depolarization or hyperpolarisation.¹³

Table 1: Time taken for paralysis of *P. posthuma* to occur following contact with Piperazine citrate, Albendazole and Saraswatha churna

GROUP	TREATMENT	CONCENTRATION(mg/mL)	TIME FOR PARALYSIS(min)
Ι	Normal saline (control)	-	-
II	Piperazine citrate	15	6.13±0.22
III	Albendazole	20	2.20±0.03
IV		15	8.23±0.15
V	Saraswatha churna	25	6.87±0.20
VI		50	3.54±0.06

CONCLUSION

Saraswatha churna has paralytic effect on Indian *P.posthuma*. This effect may be explored in the possible use of the product as an antihelminthic agent.

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