

SYNERGISTIC ANTHELMINTIC ACTIVITY OF RHIZOMES OF *ACORUS CALAMUS* AND AERIAL PART OF *CLEOME VISCOSA*.

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Summary

The present study reports the synergistic anthelmintic activity of rhizomes of *Acorus calamus* and aerial part of *Cleome Viscosa*. The study shows that the ethanolic extract of *A. Calamus* and *C. Viscosa* shows dose dependant anthelmintic activity against earthworm *Pheritima postuma*. Also the synergistic anthelmintic activity of *A. calamus* and *C. viscosa* is significant than the individual activity of both the plants. For this study marketed drug was used as a standard reference drug. From results we can conclude that combination of *A. calamus* with *C. viscosa* is more potent than individual drug for its anthelmintic action, which will be beneficial to reduce dose and any possible toxicity of the herbal drugs and will be more suitable for formulation of suitable dosage form.

Introduction

Cleomeolide is isolated from leaves of *Cleome Viscosa*; tetrahedrom; a new 7-phenoxycaumarin-cleosandrin and cleomiscosin A & B are isolated from its seeds; methyl glucosinolate, bezyl glucosinolate, 2-phenethyl-glucosinolate, 5-O-methyl-eriodictyol-7-O-B-D-rhamnopyranoside, naringenin-4'-O- β -D-xylopyranosyl-[1 \rightarrow 4]- β -D-glucopyranoside. 3',4',5-trihydroxy flavone-7-O- α -L-rhamnopyranoside, β -amyrin and lupeol were isolated from the roots. A new saponin isolated and characterized are as stigmasta-5,24-diene-3 β -O- α -L-rhamnoside, ergot-5-ene-3-O- α -L-rhamnopyranoside and 5,4'-di-O-methyl-eriodictyol-7- β -D-glucopyranoside.

Acorus calamus (Araceae) is the botanical name of the plant more commonly known as calamus. The plant has a branched and aromatic root or rhizome from which rise its long erect leaves. The roots have a sweet fragrance and the leaves smell similar to lemon. The sword-like leaves of the plant resemble those of other similar plants so much, that before the *Acorus calamus* is in flower, it is difficult to recognize it simply by the appearance of its leaves. In late spring, green flowers appear in 2 to 4 long spadices (plural form of spadix) below the leaf tips. The flowers eventually give way to small berries. Calamus is found in both temperate and sub-temperate areas of the globe. The sheathing leaves of this perennial are from 2 to 6 feet in height and about 1 inch in width. They are sharp pointed and have a ridged midrib running their entire length. The plants are used traditionally as abortifacient; aphrodisiac; aromatic; carminative; diaphoretic; Emmenagogue; Febrifuge; Hallucinogenic; Homeopathy; Odontalgic; Sedative; Stimulant; Stomachic; Tonic; Vermifuge. The root is anodyne, aphrodisiac, aromatic, carminative, diaphoretic, emmenagogue, expectorant, febrifuge, hallucinogenic, hypotensive, sedative, stimulant, stomachic, mildly tonic and vermifuge.

Material and Methods^[20-22]

Plant Materials

Rhizomes of *Acorus Calamus* and aerial parts of *Cleome Viscosa* were collected commercially and authenticated from Dept. of Botany, PVP College, Loni.

Drugs and Chemicals

Drug : Albendazole

Chemicals : Ethanol, tween 80 and saline water

Preparation of Extract

Dried and coarsely powdered rhizomes of *Acorus Calamus* and leaves of *Cleome Viscosa* were subjected separately to extraction in Soxhlet extractor using ethanol as solvent. The respective extracts were concentrated by vacuum distillation and then evaporate to yield extract in dry form.

Animals

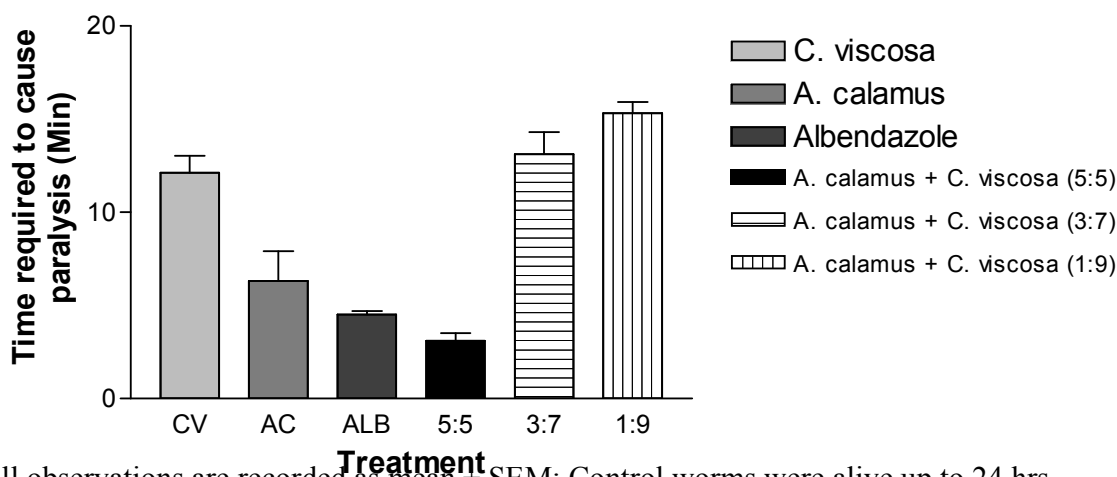
Indian adult earthworms (*Pheretima posthuma*) collected from moist soil and washed with normal saline to remove all faecal matter were used for anthelmintic study. The earthworms of 3 - 5 cm in length and 0.1 - 0.2 in width were used for all the experimental protocol due to their anatomical and physiological resemblance with the intestinal roundworm parasites of human beings

Anthelmintic Activity

The extracts of *Acorus calamus* and *Cleome Viscosa* was dissolved in vehicle (1 % Tween 80 in saline water) and then volume was adjusted to 10 ml with saline water. Extracts and drug solution were freshly prepared before starting the experiments. Seven groups, of six earthworms each were released into 10 ml of desired formulations as follows: Albendazole, ethanolic extract of *A. calamus*, ethanolic extract of *Cleome Viscosa*, ethanolic extract of *A. calamus* and *Cleome Viscosa* (5:5, 1:9 & 3:7) and vehicle. Observations were made for the time taken to paralysis. Paralysis was said to occur when the worms did not revive even in normal saline.

Results and Conclusions

From results we can conclude that combination of *A. calamus* with *C. viscosa* (5:5) is more potent than individual drug for its anthelmintic action, which will be beneficial to reduce dose and any possible toxicity of the herbal drugs and will be more suitable for formulation of suitable dosage form.

Figure 1: Synergistic anthelmintic effect of *C. viscosa* and *A. calamus*

All observations are recorded as mean \pm SEM; Control worms were alive up to 24 hrs.

References

1. Kirtikar K.R. and Basu, B.D. 1987. Indian Medicinal Plants. In: Vol. I, 2nd ed. International Book Distributors. Dehradun. pp. 830
2. Dr. K.M.Nadkarni's Indian Materia Medica vol I Bombay Popular Prakashan Pg. no. 35 & 351
3. Bird. R. (Editor) Growing from Seed. Volume 4. Thompson and Morgan. 1990
4. Facciola. S. Cornucopia - A Source Book of Edible Plants. Kampong Publications 1990 ISBN 0-9628087-0-9
5. Huxley. A. The New RHS Dictionary of Gardening. 1992. MacMillan Press 1992 ISBN 0-333-47494-5
6. F. Chittendon. RHS Dictionary of Plants plus Supplement. 1956 Oxford University Press 1951
7. Hedrick. U. P. Sturtevant's Edible Plants of the World. Dover Publications 1972 ISBN 0-486-20459-6
8. Grieve. A Modern Herbal. Penguin 1984 ISBN 0-14-046-440-9
9. Compendium of Indian Medicinal Plants. Vol 3 1980-1984
10. Ram .P. Rastogi & B. N. Malhotra Pg. no. 182-183
11. [plants of love: aphrodisiacs in myth, history...](#)
12. [the encyclopedia of psychoactive plants](#)
13. [the encyclopaedia of psychoactive substances](#)
14. Parasitology by K.N.Chatterjee 12th edition 2002 Chatterjee medical publisher, Pg no.107-111, 119-121,
15. Pharmacology and phramacotherapeutics by Satoskar and Bhandarkar, 17th edition 2001 Pg.no. 787-799
16. Medicinal Chemistry By- Kadam, Mahadik & Bothara
17. Organic Medicinal Chemistry By- Wilson Page no- 264-267
18. The Merck Index, 12th Ed., page 1119: entry 6611 Nicotine, Merck & Co. 1996
19. Arnold, M.D., Harry L. (1968). Poisonous Plants of Hawaii. Tokyo, Japan: Charles E. Tuttle Co.. pp. 51.
20. Anonymous. 2005. The Wealth of India. In: Vol. VIII, Council of scientific and Industrial Research, New Delhi, pp.206- 211
21. Harborne, J.B. 1973. Phytochemical Methods. In: A guide to Modern Techniques of Analysis, Chapman and Hall Publishers, London, pp.4-7.
22. Thorn, G.W., Adams, R.D., Braunwald, E., Isselbacher, K.J. and Petersdrof, R.G. 1977. Harrison's Principles of Internal Medicine. In: Mcgraw Hill Co., New York, pp. 1088-1089.