

KATTU SIRAKAM – ITS PHARMACOGNOSY**ANANDAKUMAR. A., RAJENDRAN. V., BALASUBRAMANIAM AND MURALIDHARAN. R.**

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Received: January 13, 1983**Accepted: July 30, 1983**

ABSTRACT: *Kattusirakam or Vanajira is an important fruit drug in Siddha and Ayurveda systems of Medicine. The market sample of Madras has been identified in our laboratory as the fruits, commonly known as seeds of *Centratherum anthelminticum* (Willd) Kuntz. (Syn. *Veronia anthelmintica* Willd) of the family Compositae. The morphology, anatomy, fluorescence analysis and chemical characters of the drug are dealt with here.*

INTRODUCTION

In Siddha and Ayurveda Systems of Medicine, Kattusirakam is an important fruit drug. It is used in chronic skin diseases and leucoderma. It is also an anthelmintic. The fruits of Madras crud drug trade has been identified in our analytical laboratory as the fruits of *Centratherum anthelminticum* (Willd) Kuntz as described in various *Materia Medicae*.

As a complete pharmacognosy has not so far been reported, an attempt has so been initiated in our analytical laboratory.

MATERIALS AND METHODS

Kattusirakam was procured in the local market and its macroscopical, microscopical and histochemical studies were carried out. (Easu K. 1974, Johansen D. A. 1939, Trease G. E. and Evans W. C. 1966). The preliminary chemical analysis were done with three different samples and

results are tabulated in Table II. (Pharmacopoeia of India 1970).

The drug was powdered and extracted in a soxhlet extractor with petroleum ether. The extract was subjected to Thin layer Chromatography on Silicagel G layer (0.2 mm thick) using petroleum ether 60 – 80°C, diethyl ether and acetic acid in the ratio 70: 30: 2 as elucant. After development, the plate was dried and observed under ultraviolet longwave radiation. The number of spots and their values of hRf were recorded. The results are given in Table III. For further visualization, the plate was sprayed with sulphuric acid and kept at a temperature of 110°C for 15 mts. The number, colour and hRf values of the sports were recorded. The results are given in Table IV.

RESULTS AND OBSERVATIONS :**Macroscopical Characters:**

The drug Kattusirakam are technically fruits, but commonly known as seeds. They are achenes and compositaceous. They are dark brown to almost black in colour, cylindrical to oblong in shape but tapering towards the base, 3 – 5 mm long and the surface is covered with whitish scattered hairs and marked with about ten longitudinal ridges. The upper end is encircled by a series of semitransparent flat hair like brown coloured scales. The embryo has well developed cotyledons and a broad stalk having a truncate top.

Microscopical Characters:

The achene in cross section shows a thin pericarp with ridges and furrows. The epidermis is single layered and parenchymatous. Cells are 10.5 – 17.5 –

24.5 x 7.0 – 8.2 microns in size. They are filled with coloured pigments. Trichomes are of clothing type. One is unicellular, 42 – 210 microns long, 3.5 – 7 microns diameter. Another type is papillae 21 – 24.5 x 3.5 – 14.5 microns in size. Second type of trichome is mostly found at furrows. The ground tissues of the pericarp is parenchymatous as well as sclerenchymatous. Below the ridges are vascular strands after 2 – 4 layered parenchyma cells of 7.0 - 10.5 – 17.5 microns in size. Below the vascular strand is a group of fibres and their lumen is 7.0 – 10.0 – 17.5 x 7.0 – 17.5 – 28.0 microns in size. This layer is followed by thick walled unligified cells of 3.5 – 7.0 - 10.5 microns. The innermost layer of the pericarp shows characteristic discontinuous arches of lignified fibres.

TABLE – 1

Fluorescence Analysis

S. No.	Treatment	Daylight	U V Long wave
1	Powder as such	Blackish brown	Bluish brown
2	Powder and water	Blackish brown	Greenish blue
3	Powder and 50% HCl	Light reddish brown	Bluish green
4	Powder and 50% H ₂ SO ₄	Reddish brown	Bluish green
5	Powder and 0.1 N NaOH	Yellowish brown	Dark brown
6	Powder and Benzene	Pale yellowish brown	Greenish blue
7	Powder and Hexane	Pale yellowish brown	Greenish blue
8	Powder and Acetone	Yellowish brown	Greenish blue
9	Water soluble extract	Reddish brown	Pale blue

10	Alcohol extract	Reddish brown	Bluish Pink
11	Petroleum ether extract	Light green	Blue

The gap between the arch and seed coat is filled up by the parenchyma. These cells are 10.5 – 17.5 – 24.5 microns in size. Testa is one layered and parenchymatous. Cells are 10.5 – 17.5 – 24.5 x 12.2 – 14 microns in size. Cuticular layer is present between the testa and cotyledon. The cotyledon is completely parenchymatous and the cells are 17.5 – 46.2 – 62.0 x 5.2 – 7.0 microns in size. They contain oil globules and aleurone grains. The starch granules are absent.

TABLE – II

Preliminary Chemical Analysis Physical Constants

1	Ash content	5.01 – 6.68 %	By wt.
2	Acid Insoluble Ash	0.69 – 1.42 %	”
3	Loss on Drying	7.50 – 9.20 %	”
4	Foreign Matter	2.32 – 4.37 %	”
5	Fixed oil	15.42 – 22.32 %	”
6	Alcohol Soluble Extractive	23.34 – 26.22 %	”
7	Water Soluble Extractive	10.68 – 12.22 %	”

TABLE – III

Thin Layer Chromatography

Stationary Phase	: Silica gel G
Solvent	: Petroleum ether : Diethyl ether : Acetic acid 70 : 30 : 2
Detection	: Ultra violet wave radiation

Extract	: Petroleum extract of the drug	
No. of Spots	Colour of the spot under U. V. Long Wave Light	hRf
8 spots	Light Blue	7.40
	Blue	44.74
	Blue	60.74
	Light rose	65.19
	Blue	70.37
	Greenish blue	76.29
	Yellowish green	84.75
	Sky blue	97.77

TABLE – IV

Thin Layer Chromatography

Stationary Phase	: Silica gel G	
Solvent	: Petroleum ether : 60 – 80° : Diethyl ether : Acetic acid : 70 : 30 : 2	
Spray reagent	: Sulphuric acid	
No. of Spots	Colour of the spot under U. V. Long Wave Light	hRf
8 spots	Pink	6.67
	Light brown	10.83
	Light brown	11.66
	Light brown	24.17

	Pink	31.67
	Light brown	36.67
	Light brown	42.67
	Light brown	48.30
	Pink	55.83
	Brown	70.83
	Brown	90.83
	Pink	93.33
	Light brown	99.17

DISCUSSION

Macroscopical and microscopical characters of the drug are very characteristic and they can very well be accepted as standard parameters in analysing the drug. Moreover the Thin Layer Chromatography with petroleum ether extract of the drug shows eight spots under U. V. Lamp and fourteen spots when sprayed with sulphuric acid.

Further analysis are in progress in our Laboratory.

ACKNOWLEDGEMENT:

The authors are grateful to the Board of Directors and to Dr. B. Vaidyanathan, the Secretary of IMPCOPS Ltd for their incessant support and guidance.

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