

## CHEMICAL ANALYSIS OF CUVACAK KUTORI MATTIRAI

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**ABSTRACT:** *Cuvacakkutori (mattirai) is an important herbal medicine prescribed for bronchial asthma in siddha system of medicine. In order to evolve pharmacopoeial standards, the medicine was prepared in laboratory scale and chemically analysed. Analytical data along with the tlc pattern can be used for fixing standards.*

### INTRODUCTION

There are large number of plants and compound formulations in the Indian systems of medicine for the treatment of asthma. The compound formulation *Lavangadi vati*<sup>2</sup> of Ayurveda and *Naayuruvi Kuli Tailam*<sup>3</sup> of siddha are reported to have therapeutic effect.

*Cuvacak kutori* is a compound herbal drug used for the treatment of asthma in the siddha system of medicine<sup>4, 5</sup>. It is a *Mattirai/ Kulikai* group of medicine. The drugs of this group are prepared by grinding the raw drugs to a fine paste and rolling into pills. *Cuvacak kutori* as prepared to lay down the standard.

### MATERIALS AND METHODS

The raw drugs vellerukkan Poo (white mudar flower) – *Calotropis procera* Ait f, and milaku (black pepper) – *Piper nigrum* L. (fruits) were collected/ procured locally and were identified in our botany department<sup>6</sup>.

#### Preparation of *cuvacak Kutori*

White mudar flower and black peper 75g each, were ground and were mixed. The grinding was continued to a fine

consistency, rolled into 130 mg weight /pill and shade dried<sup>4</sup>.

#### Analytical Method

The *cuvacak kutori* was analysed for moisture, ash, acid insoluble ash volatile matter, exhaustive extraction, solubility in water and alcohol as per procedure detailed in pharmacopoeial standards for Ayurvedic formations<sup>7</sup>. Total alkaloid content was determined as per the method given in Mukerji<sup>8</sup>.

#### Qualitative analysis

Inorganic ions were analysed after igniting the tablets and organic contents were analysed with the solvent extract of the medicine.

#### Thin-layer chromatography

The *cuvacak kutori*, white mudar flower and black pepper were extracted into ethyl acetate and were spotted over silica gel plates. The plates were developed in the following solvent systems.

- (i) Benzene: Ethyl acetate (4:1)
- (ii) Benzene: Ethyl acetate (1:1)

The chromatograms were developed with dragendorif's reagent and with sulphuric acid- water (1:1)

## RESULTS AND DISCUSSION

*Cuvacak kutori* tablet was light brown in colour with pungent oodour and bitter in taste; slight mottling; can be chipped; fine finishing and the intactness of the polls was good. The average weight of pills was good. The average weight of polls taken for 20 tablets after drying was 123mg per tablet. The maximum and minimum variation in the weight of the polls was 8.2 mg 3.2 mg respectively.

The analytical values of *cuvacak kutori* are summarized in table 1. The acid insoluble ash was 0.58%. The qualitative analysis of the ash has shown the presence of sulphate, carbonate, chloride, sodium, potassium, calcium and iron as the acid and basic redicals. Organic analysis of the solvent extract indicated the presence of alkaloid steroid, triterpenoid, cardenclide, saponin, tannin, phenol and sugar, as the major elements.

The extraction values were equal in hexane and benzene while the extraction in chloroform was higher than in these solvents. The solubility of the medicine as 26.93% in alcohol and 25.47% in water.

Thin-Layer chromatogrphy showed resolution of drug into six spots of Rf value 0.89, 0.77, 0.63, 0.4, 0.27 and 0.16 in benzene – ethyl acetate (4:1) and four spots Rf: 0.9, 0.82, 0.7 and 0.42 in the solvent benzene – ethyl acetate (1:1). There was

development of colour at the point of application. The extract of *p. nigrum* also showed spots corresponding to compound drug while the extract of *calotropis procera* did not move in these solvents (fig. A&B).

The flowers of *C. procera* are reported to be useful in asthma<sup>9</sup> cold and cough. They contain holarrhetine, cyaniding-3-rhamnoglucoside, alkaline phosphatase, quercetin -3- rutinoside (7.63%), calotropenyl acetate,  $\alpha$  – amyryrin and stigmasterol 10:11. Flower oil and extracts are reported to possess antibacterial and anti-microbial activities against several pathogens. The other ingredient *P. nigrum* is reported to be rich in amide alkaloids such as piperine, piperidine, pipericide, piperitine, chavicine,  $\alpha$  – phelladrene, caryophyllene and its oxide.

The active antiasthmatic principles in *Adhatoda vasica* and *Euphorbia helioscopia* have been identified as alkaloids- vascione and vasicine, and helipsin (quercetin – 3-digalactoside) respectively. The ingredients of *cuvacak kutori* have the active principles closely related in chemical structure to the above mentioned chemicals. The antiasthmatic activity of the medicine may be due to these chemical compounds.

### Acknowledgement

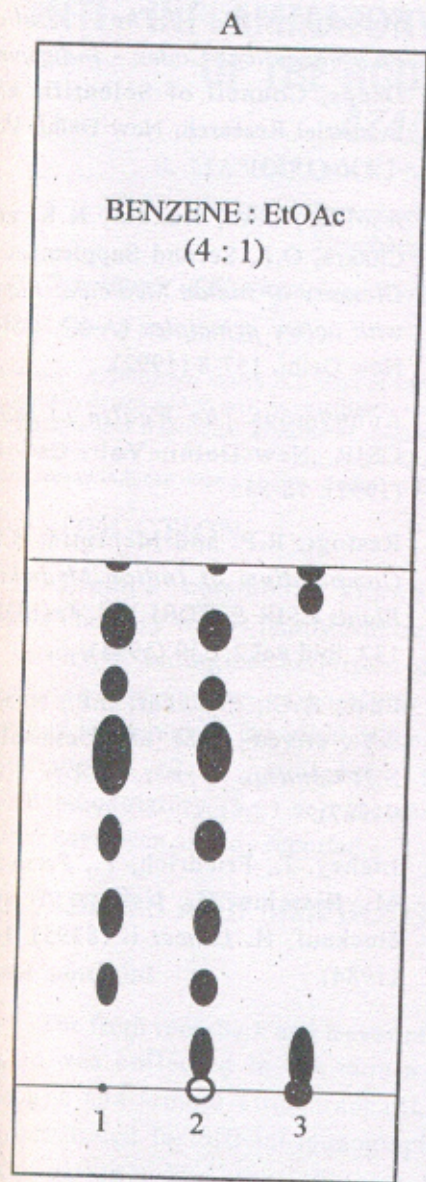
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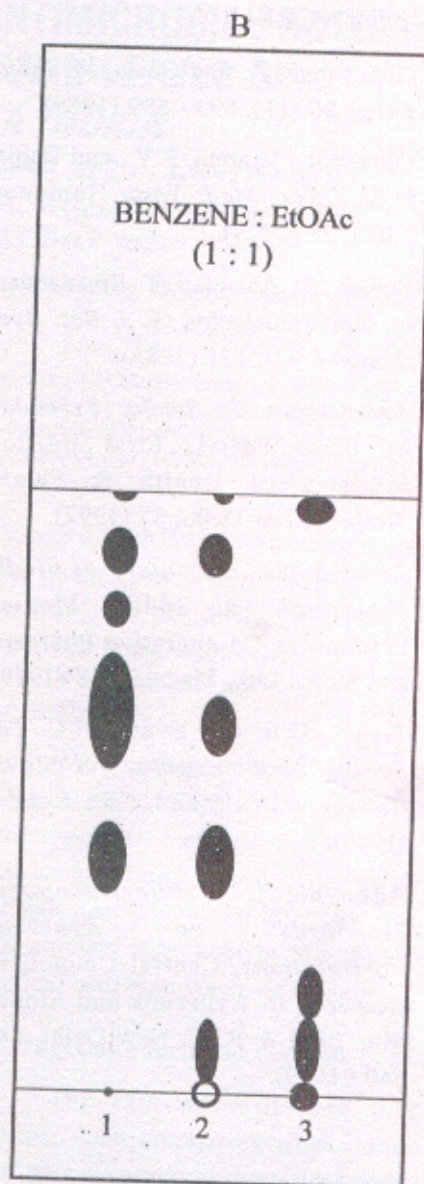
**Table 1**  
**Analytical values of *Cuvacak kutori***

<b>Parameters</b>	<b>Value (% w/w)</b>
Loss on drying at 110oC	3.43
Total ash	5.15
Acid insoluble ash	0.58
<b><u>Extractive values (hot)</u></b>	
n-hexane	10.71
Benzene	10.72
Chloroform	11.25
<b><u>Solubility</u></b>	
Water	25.47
Alcohol	26.93
Total alkaloid	4.88
Volatile matter (by steam distillation)	3.1

## Cuvacak Kutori - Thin Layer Chromatography



Rf: 0.89, 0.77, 0.63,  
0.44, 0.27, 0.16



Rf: 0.9, 0.82, 0.7, 0.42

EtOAc extract of

1. *Piper nigrum* L.
2. Cuvacakkutori (mattirai)
3. *Calotropis procera* Ait.f

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