

ANALYTICAL STUDIES ON MATTAN TAILAM A. Saraswathy, M. Girijarani, S. Joy and M.M. Alam

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Abstract: *Mattan tailam*, a siddha herbo-mineral oil was prepared and chemically analysed. The physico chemical parameters and thin layer chromatographic pattern were evolved to lay down the standards, The data presented can be used for fixing standards to mattan tailam.

INTRODUCTION:

'*Mattan tailam*', otherwise known as 'Paccai ennai' is a medicated herbo-mineral oil used in Siddha system of medicine. It is placed in tailam group. The preparation of tailams involve different oils in various medicines as the base material to extract the active chemicals from new drugs. The tailam is used, externally for eczema and putrid ulcers, the tailam is also used in ear ache, accompanied with discharge of pus⁽¹⁻⁴⁾. The three ingredients which constitute the oil are *umattai ilai* – *Datura metel* L. *tenkay enney* – *Cocos nucifera* L. and *turucu* – Copper sulphate.

In our standardization studies on siddha system of medicine, *mattan tailam* was taken up for chemical analysis in order to lay down standards. The present paper deals with the analytical studies and thin layer chromatographic on the sample of *mattan tailam*.

Materials and Methods:

The raw drugs were procured from the local drug market and were identified in the botany and chemistry departments of this institute. The medicine was prepared as per the procedure detailed in siddha formular1. (Table -1)

Analysis of raw drug 'turucu':

Copper was estimated by titrimetric method and sulphate was determined as barium sulphate gravimetrically⁵.

Analactical Methods:

Qualitative inorganic analysis was done after igniting the sample. Organic analysis and physio- chemical analysis were carried out as per the standard procedure^{6,7}. Total alkaloid content as estimated following the method described in Indian pharmaceutical codex⁸.

Chromatographic analysis:

TLC (silica gel) for the *mattan tailam*, the total alkaloid contents and *Datura* leaf extract were carried out in the following two solvent systems.

1. Hexane: benzene (1:1)
2. Benzene

The chromatograms were developed by spraying with Dragendorff's reagent and 50% H₂SO₄⁹

Table – 1
Ingredients of *Mattan Tailam*

S. No	Tamil name	Botanical/Chemical	Anatomical part	Qty used
1.	Ummattai elai	Datura metel L.	Leaf juice	5500
2.	Tenkay ennay	Cocos nucifera L.	Oil	1400
3.	Turucu	Copper sulphate	-	350

Results and Discussion:

Turucu (Copper sulphate) analysis revealed the copper and sulphate contents as 25.10 and 38.25% respectively with traces of chloride and iron. *Mattan tailam* (paccai ennai) was a greenish blue coloured (herbo-mineral) oil with pleasant odour. The moisture content of turucu was 28%. Qualitative inorganic analysis of the tailam showed the absence of copper and sulphate through turucu (copper sulphate) has been utilized as one of the ingredients. This may be due to the insolubility of copper sulphate in coconut oil – (*Cocos nucifera*). *Mattan tailam* answered for the presence of alkaloid(s) thereby indicating its extraction from Datura leaf.

The physico-chemical parameters of the sample are summarized in table-2 the moisture content was 0.13% Refractive index of the medicine (1.454) was higher than that of coconut oil (1.449) which may be due to the dissolved constituents. The volatile matter was 0.03%. Iodine value, specification value and acid value were 12.14, 257.2 and 1.621 respectively. The slight difference in these values from that of coconut oil might be due to the presence of alkaloids from Datura leaf. The literature search revealed that the leaves of D. metel are rich in alkaloids (0.426%) viz Atropine, hyoscyamine and related compounds, out of which atropine and

hyoscyamine are reported as a stimulant for the central nervous system and useful in conditions of renal, biliary colic and asthmatic problems. The total alkaloidal contents in the tailam was 0.114 (% w/v).

TLC of *Mattan tailam* resolved into six ($R_f = 0.06, 0.09, 0.13, 0.19, 0.6, 0.74$) and five ($R_f = 0.06, 0.2, 0.3, 0.4, 0.72$) spots in n-hexane and benzene (1:1) and benzene respectively. Dragendorff positive spot with $R_f = 0.06$ was found in the tailam, alkaloidal portion separated might have extracted into the tailam during the process of preparation. The therapeutic activity of the medicated oil might be due to the presence of these secondary metabolites.

CONCLUSION:

Mattan tailam had been prepared in laboratory scale as per the Govt. Siddha formulary and chemically analysed. The physico-chemical parameters and the thin layer chromatography of the oil had been studied. The therapeutic activity of the oil might be due to the presence of alkaloids and other components identified by TLC the analytical data along with the TLC pattern can be used for fixing standards to this tailam.

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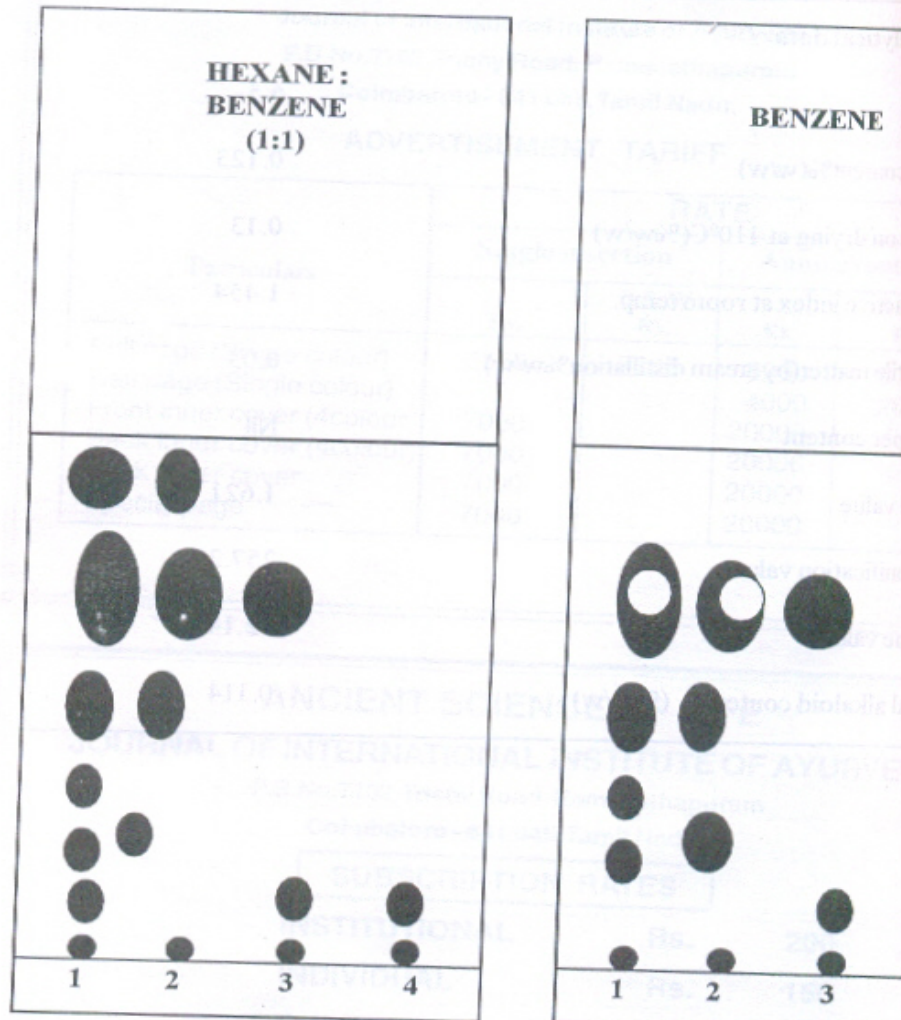
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Table -2
Physico-chemical parameters of Mattan tailam

Parameters	Value
1. Organoleptic Characters	
Colour	Greenish blue
Smell	Pleasant
Touch	Oily
Clarity	Clear

Parameters	Value
2. Analytical data	
pH	6.5
Ash content % (w/w)	0.123
Loss on drying at 110°C (% w/w)	0.13
Refractive index at room temp.	1.454
Volatile matter (by steam distillation % w/w)	0.03
Copper content	Nil
Acid value	1.621
Specification value	257.2
Iodine value	12.14
Total alkaloid content % (w/w)	0.114

Fig. 1
Thin Layer Chromatography of Mattan Tailam



1 Mattan Tailam

2. Coconut Oil

3. Alkaloids from Mattan Tailam

4. Datura leaf extract

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