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

Drug standardisation Research Unit (Siddha)
C.S.M.D.R.I.A. (C.C.R.A.S) Arumbakkam, Madras – 600 106 INDIA

Received: 14th January, 1999
Accepted: 1st March, 1999

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 ennay’ 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.

Analitical Methods:
Qualitative inorganic analysis was done after igniting the sample. Organic analysis and physio- chemical analysis were carried out as per the standard procedure6,7. 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%) vi 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 (Rf = 0.06, 0.09,0.13,0.19,0.6,0.74) and five Rf = 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 Rf= 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.

ACKNOWLEDGEMENT:
Authors wish to thank the director, central council for research in Ayurveda and siddha for financial support. The director central research institute for siddha, Madras for helpful discussion and the project officer, Drug standardisation research Unit (Siddha) for providing facilities.

Table -2

| Physico-chemical parameters of Mattan tailam |
|----------------------------------------------|
| **Parameters** | **Value** |
| **1. Organoleptic Characters** | |
| Colour | Greenish blue |
| Smell | Pleasant |
| Touch | Oily |
| Clarity | Clear |
| **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 |
REFERENCE:

1. Anonymous, 1992 The Siddha Formulaory of India first Edition, Min of Health & F.W Govt of India, New Delhi 109
2. Thyagarajan.R. 1992  Kunapatam, Indian Medicine And Homeopathy Board, Govt, of Tamilnadu, part 2&3,4th Edition, Madras – 18

3. Anonymous, 1984  Bharathathu suddha Maruntukal Ceymuraikkurippu No.01, Min of H. & F.W. Govt of India New Delhi 229

4. Anonymous, 1989  Formulary of siddha medicine the Indian medical practitioner Co-operative pharmacy & stores Ltd., Madras 279.

5. Vogel 1989  Text Book of Quantitative chemical analysis 5th Edn, ELBS., Longman group, U.K. 393

6. Anonymous, 1987  Pharmacopoeial standards for Ayurvedic formulations CCRAS Min of H.& F.W New Delhi

7. Anonymous, 1964  Indian standard methods of sampling and test for oils and fats Indian standard institution New Delhi 47-50

8. Mukerji, B 1953  The Indian Pharmaceutical CodexB Indigenous Drugs. CSIR Govt of India, New Delhi Vol I, 136

9. A.Saraswathy, Sankar.R. Pappa.V. Purushothaman K.K 1992  J.R.A.S. And XIII (1-2) 71-77

10 Anonymous, 1952  The Wealth of India, Scientific and industrial Research New Delhi, Vol III (D-E, 17,18)