ALTERNATIVE SYSTEMS OF MEDICINE
AS A SOURCE OF NEW ANTIFUNGAL DRUGS
(SIDDHA DRUGS)
ALTERNATIVE SYSTEMS OF MEDICINE AS A SOURCE OF NEW ANTIFUNGAL DRUGS (SIDDHA DRUGS)

A literature survey on the drugs used in the treatment of candidal infection shows that there is still scope to pursue the research for discovering and developing more and more newer drugs. The alternative systems of medicine such as Siddha, Unani and Ayurveda have always come to the rescue of the modern medicine, whenever there was dearth of new drugs. Our perusal in the literature of Siddha system of medicine revealed that there are several drugs available for the treatment of fungal infections. However they do not have scientific data to substantiate their use as antifungal drugs and especially so against the various strains C.albicans. Hence the screening of various Siddha drugs for their antifungal activity against various strains of C.albicans was considered worthwhile.

The drugs that were to be taken for the present study are:

1) Palakarai parpam
2) Nandhi mezhugu
3) Vaan mezhugu
4) Iedi vallaathi mezhugu
5) Erasa kenthi mezhugu
6) Sivanar amirtham
7) Parangi pattal chooranam

A. Literature Survey:

The formulae, uses and dose of the various drugs used in our study are given below (Chidambaramathanu Pillai, 1992):
1) Palakaral parpam:

Drugs:

a) Cowrie shells ... Quantity
b) Lime juice ... Sufficient quantity

Process: Break shell into pieces, soak in some lime juice and clean them. Wash the pieces and grind with lime juice into a paste. Make cakes, dry and calcine. For 1 kg of shells or cakes, 150 cow dung cakes are sufficient to calcine three times, each time using 50 dung cakes. A white calx will result.

Indications: Colic, retention of urine, inflammation of urinogenital tract and stomach poisoning.

Dose: 50 to 100 mg with butter milk, milk, butter or ghee.

2) Nandhi mezhugu:

Drugs:

1) Marking nut ... 1 kg
2) Nux vomica seeds ... 315 grams
3) Ghee ... 1400 grams
4) Common alum ... 1120 grams
5) Plam jaggery ... 2240 grams
6) Honey ... 1400 grams
7) Calx of copper pyrites ... 53 grams
8) Calx of asbestos ... 53 grams
9) Calx of gypsum ... 53 grams
10) Calx of Fossil Crabs (Nandukkal) ... 53 grams
11) Camphor ... 53 grams
12) Gorochan ... 53 grams
13) Red sulphide of mercury ... 140 grams
14) Three pungents-each ... 35 grams
15) Cardamom seeds ... 35 grams
16) Beetle killer roots ... 35 grams
17) Yew leaves ... 35 grams
18) Henbane niger ... 35 grams
19) Embelia ... 35 grams
20) Atis ... 35 grams
21) Nutmeg ... 35 grams
22) Mace ... 35 grams
23) Cumin ... 35 grams
24) Nigella seeds ... 35 grams
25) Cloves ... 35 grams
26) Black pepper root ... 35 grams
27) Wild black pepper ... 35 grams
28) Lead wort root ... 35 grams
29) Long pepper stems ... 35 grams
30) Poppy seeds ... 35 grams
31) Fennel ... 35 grams
32) Croton cotyledons ... 35 grams
33) Lesser galangal ... 35 grams
34) Indian spike nard ... 35 grams
35) Pellitory ... 35 grams
36) Withania roots ... 35 grams
37) Red Sulphite of Mercury
   (Market quality) ... 25 grams
38) Alkaline earth salt ... 25 grams
39) Blue vitreol ... 25 grams
40) White vitreol ... 25 grams
41) Mercury ... 25 grams
42) Sulphur ... 25 grams
43) Calomel ... 25 grams
44) Cinnabar ... 25 grams
45) Red orpiment ... 25 grams
46) Yellow orpiment ... 25 grams
47) Arsenic penta sulphide ... 25 grams
48) Indigo juice and paste ... Sufficient quantity

Preparation:
a) Mix 1, 2 and 3 and heat to fry. Separate ghee and seeds. Grind the seeds into a fine paste.
b) Grind 14 to 36 into fine powder. Powder also drug No.4.
c) Grind 37 to 47 into a paste with 48 for 6 hours. Make cakes and dry. Cover the cakes with paste of 48 and Calcine. Take the product and powder.
d) Prepare syrup of palm jaggery and add a, b and c and the caixes. Add ghee and honey. Add to the mixture, powders of camphor and gorochan and thoroughly mix.

Indications: Insect sting, rat bite, carbuncle, rheumatism, colic, skin diseases, cancer, bubo, scrofula, eczema, urinary diseases, piles, paralysis and leprosy. Also in anaemia, spermatorrhoea, oedema, headache, fevers, ascites and fistula and dental diseases.
Dose: 250 to 500 mg. once or twice daily.

3) Vaan mezhugu:
Drugs: Take the following in equal parts
1) Mercury
2) Red sulphide of mercury
3) Sulfur
4) Corrosive sublimate
5) Arsenic penta sulphide
6) White arsenic
7) Litharge
8) Colonel
9) Alkaline earth salt
10) Cinnabar
11) Opium
12) Lode stone
13) Gum benzoin
14) Anda thilam
15) Camphor
16) Yellow orpiment

Process: Grind mercury and sulphur. Add other drugs and grind with 16 into a fine waxy paste.

Indications: Delirium, tuberculosis, leprosy, colic, dysmenorrhoea, ascitis, scrofula, paralysis and diabetes.

Dose: 100 to 200 mg with palm jaggery.

4) Iedi Vallaathi Mezhugu:

Drugs:

1) Marking nuts ... 300 grams
2) Sesame seeds ... 150 grams
3) Copra ... 150 grams
4) China root ... 30 grams
5) Withania root ... 30 grams
6) Lead wort root ... 30 grams
7) Wild turmeric ... 30 grams
8) Nigella seeds ... 30 grams
9) Celastrus seeds ... 30 grams
10) Henbane niger ... 30 grams
11) Betel leaf stalk ... 30 grams
12) Chebulic myrobalan ... 30 grams
13) Long pepper ... 30 grams
14) Costus root ... 30 grams
15) Calomel ... 15 grams
16) Palm jaggery ... 150 grams

Process: Pound drugs 1, 2 and 3. Then add 4 to 15 and pound into a fine paste. Finally add 16 and pound until a waxy homogenous mass results. Use after 3 months of storage.

Indications: Rheumatic diseases, ulcers, eczema, itch, venereal diseases, abscesses and leucorrhoea.

Dose: 200mg to 500 mg. Twice a day with Palm jaggery. Take unsalted food.

5) Erasa kenth mezhugu:

Drugs: Take ten grams each of the following:

1) Mercury
2) Sulphur
3) Calomel
4) Yellow orpiment
5) Lode stone
6) Blue vitreol
7) Calamine
8) Litharge
9) Dry ginger
10) Ajowan
11) Turmeric
12) Embelia
13) Sweet flat
14) Clove
15) China root
16) Marking nuts
17) Chebulic myrobalan
18) Nigella
19) Wild cumin
20) Beetle killer
21) Yaw leaf
22) Raisins
23) Long pepper
24) Lesser galangal
25) Costus
26) Celastrus
27) Fennel
28) Cardamom
29) Nutmeg
30) Black pepper
31) Cumin
32) Psoralea
33) Nut grass
34) Long pepper root
35) Mexican poppy root
36) Nux vomica
37) Nux potatorum
38) Onion
39) Sesame seed
40) Horse gram
41) Copra
42) Acalypha root
43) Azima root
44) Withania
45) Corallocarpus root
46) Lead wort root
47) Lead wort root ... 10 Nos.
48) Palm jaggery ... 500 gms.

Process: Powder 1 to 8. Pound 9 to 46. Sieve the powders and mix. Add egg albumin and yolk. Mix well and dry. Prepare syrup of jaggery (from its solution filtered to remove any grit). Mix with powders and beat with a heavy pestle to get a fine waxy mass. Use after 40 days storage.

Indications: Rheumatic diseases, skin diseases, leprosy, piles, diseases of the hair, chancre and cancerous ulcers.

Dose: 250 to 500 gms with palm jaggery. Twice daily with curd rice.

6) Sivanar Amirtham:

Drugs:

1) Male fern rhizome ... 1 part
2) Mercury ... 1 part
3) Aconite ... 1 part
4) Sulphur ... 1 part
5) Three pungents-each ... 1 part
6) Red orpiment ... 1 part
7) Borax ... 1 part
8) Black pepper ... 7 part

Process: Grind 2 and 4 and prepare black sulphide. Add powders of the remaining drugs and continue grinding to obtain a very fine black product. Grind at least for 7 days. The product
should be greenish black in colour.

**Indications:** Rheumatic diseases, respiratory diseases and diseases due to deranged bile. Also in leprosy, colic, delirium, piles, ascitis and tuberculosis. Used as a snuff in cases of insect stings.

**Dose:** 100 to 200 mg. Avoid salt and tamarind in diet during treatment.

7) **Parangal pattai chooranam**:

**Drugs:**

1) China root ... 1 part
2) Sugar ... 1 part
3) Sacred basil juice ... Sufficient quantity

**Process:** Soak china root pieces in 3, and dry when thoroughly saturated. Finely powder and mix with powder of sugar.

**Indications:** Venereal diseases, leprosy and leucoderma.

**Dose:** 1 to 2 gms with milk and honey.

**B. MATERIALS AND METHODS**

a) **Materials:**

The following Siddha drugs were procured from Dr. Rafeek Ahmed, Medical Officer, Siddha Hospital, Ooty and Dr. Mohaboob Ali, Head Quarters Hospital, Ooty and were subjected to in vitro antifungal testing against C. albicans.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the drug preparation</th>
<th>Manufacturer's Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>01.</td>
<td>Palakarai parpam</td>
<td>M. Gopalan Aason*</td>
</tr>
<tr>
<td>02.</td>
<td>Nandhi mezhugu</td>
<td>IMPCOPS+</td>
</tr>
</tbody>
</table>
b) Extraction:

Each of the drugs were macerated with alcohol at room temperature for 48 hours and filtered. The filtrate dried to a residue under low pressure. This dried extract was further used for testing antifungal activity.

c. in vitro antifungal activity:

The antifungal activity of the various Siddha drugs against the following strains of C. albicans viz., Ca5, Ca7, Ca8, Ca10, Ca11, Ca13, Ca15, Ca22, Ca24, Ca25, Ca26, Ca27, CaSKF and CaP was studied at doses ranging from 500 μg/ml to 31.25 μg/ml of broth using 2-fold serial dilution technique as described earlier.

C. Results and Discussion:

The results indicated that the following drugs showed significant antifungal activity against various strains of C. albicans. (Table 19)

* M.Gopalan Aason, Sagotharar Street, Ramavaram, Nagerkoll, Tamil Nadu.

+ The Indian Medical Practitioners Co-operative Pharmacy and Stores Limited, Madras - 41, Tamil Nadu.
Table 19: In vitro evaluation of antifungal activity of various Siddha drugs against C. albicans using two fold serial dilution technique

<table>
<thead>
<tr>
<th>SL No.</th>
<th>Name of the compound</th>
<th>Minimum inhibitory concentration in μg/ml</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Palakarai parpam</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>62.5</td>
</tr>
<tr>
<td>2</td>
<td>Nandhi mezhugu</td>
<td>62.5</td>
</tr>
<tr>
<td>3</td>
<td>Vaan mezhugu</td>
<td>62.5</td>
</tr>
<tr>
<td>4</td>
<td>Ied Valliaathi mezhugu</td>
<td>62.5</td>
</tr>
<tr>
<td>5</td>
<td>Era kenthi mezhugu</td>
<td>62.5</td>
</tr>
<tr>
<td>6</td>
<td>Sivanar amirtham</td>
<td>62.5</td>
</tr>
<tr>
<td>7</td>
<td>Pareangai patal</td>
<td>62.5</td>
</tr>
<tr>
<td>8</td>
<td>Clotrimazole</td>
<td>62.5</td>
</tr>
</tbody>
</table>

Remarks: MIC range - 62.5 to 250 μg/ml
Broth used: Sabouraud's dextrose broth
Volume of broth in assay tube: 1 ml
Inoculum strength: 10⁵ to 10⁶ cells/ml
Temperature at which incubated: 37°C
Observations recorded after: 24 hours
Solvent used: DMSO

Remarks: YIC range - 62.5 to 250 μg/ml
1) Nandhi mezhugu
2) Vaan mezhugu
3) Erasa kenthi mezhugu
4) Parangl pattai chooranam

The above results were further confirmed by using factorial analysis technique and found that the Siddha medicine had anti candidal activity in the following order:

Nandhi mezhugu > Parangl pattai chooranam > Erasa kenthi mezhugu > Vaan mezhugu

D) Conclusion:

Nature has created innumerable plants, herbs, metals, poisonous substances, minerals, salts and other organic substances. The Siddha system of medicine has selected such of those things which can render relief to innumerable ailments suffered by mankind. In this system of medicine, there are tens of thousands of formulae, to cure thousands of diseases. These formulae have been in use for centuries among the leading Siddha medical practitioners. However, these medicines are not popular among the people as they lack scientific validity.

In an attempt to utilise this indigenous system of medicine in our search for new antifungal drugs a few of the Siddha formulations commonly used in the treatment of skin diseases were studied. The studies, indeed justified their claim for use in skin diseases, of the drugs investigated Nandhi mezhugu, Vaan mezhugu, Erasa kenthi mezhugu and Parangl pattai chooranam had significant antifungal effect against C. albicans in vitro. Further studies with these formulations in vivo may reveal interesting facts about these medicines.