

ON THE ANTIBACTERIAL ACTIVITY OF SOME SIDDHA MEDICINES

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Abstract: *Talaka mattirai, Iti vallati meluku, tambira parpam and Naka centuram of siddha system of medicine were screened for antibacterial activity against S. aureus, S.citreus, S.faecalis B. Subtilis, P.aeruginosa, Coli, S.Boydii, V.cholerae and Klebsiella sp. Talaka mattirai inhibited the growth of s. faecalis, V.cholerae and B. Subtilis at a concentration of 0.6 mg/ml and 1mg/ml respectively. P.aeruginosa growth was inhibited at a concentration of 0.2mg/ml V. cholerae. at a concentration of 0.6mg/ml and S.boydii at a concentration of 1mg.l by iti vallati meluku. Tambira parpam inhibited the growth of S. faecalis and S. boydii at a concentration of 0.2mg/ml, V.cholerae at a concentration of 0.6mg/ml and S citreus and B. subtilis at a condensation of 1mg/ml there was inhibition of growth of S. citreus and B. subtilis by naka centuram at a concentration of 1mg/ml. Manometric studies revealed the total inhibition of S.boydii by Tambira parpam at a concentration of 1mg/ml while at 0.6mg/ml concentration inhibition was similar to tat of chlroamphenicol (1mg/ml). The antibacterial activity of these medicines was due to ingredients involved in these preparations.*

INTRODUCTION

Siddha system of medicine is one of the ancient Indian systems of medicines containing a large number of medicines which are grouped under different morphological categories of the final products, the method of preparation of each category is specific (1)

There re several medicine indicated in the treatment of infections and communicable diseases, some of these with implied antibacterial activities were screened against select pathogenic bacteria. The medicines tested were *Talaka mattirai, Iti vallati meluku. Tambira parpam and Naka centuram* corresponding to the category of *mattirai* (pills), *Meluku* (waxy), *parpam* (calx) and *centuram* (sublimates) respectively.

Materials and methods

Talaka mattirai, Iti vallati meluku. Tambira parpam and Naka centuram were purchased from Indian medical practitioners Co-operative pharmacy and stores Ltd. Madras.

Bacteria

Staphylococcus aureus, Staphylococcus citreus, Streptococcus faecalis, Bacillus subtilis, Psudomonas aerusgniosa, Esherichia coli, Shigella boydii, Vibrio cholerae and Klebsiella Sp. were obtained from institute of basic medical sciences, tharamani, madras and were maintained at our Dept on nutrient agar slants at 4°C in refrigerator, the bacteria were subcultured monthly on fresh slants.

Inoculum

One loopful culture (3 to 4 colonies) from 36 hours growth was suspended in 0.5ml

saline and one loopful therefore was used as inoculum.

Drug Concentration

Talaka mattirai

The drug was powdered and was exhaustively extracted in chloroform. The chloroform was distilled out and the residue was dissolved in 20ml chloroform and was added to nutrient broth solution to give a concentration of 0.2mg/ml, 0.6mg/ml.

Iti vallati meluku

10g drug was soaked in 100ml alcohol for 24 hours and was filtered. The filtrate was distilled to remove alcohol and the residue was dried over water bat. The residue was dissolved in alcohol to have a concentration of 10mg/ml. It was mixed into nutrient broth to give a concentration of 0.2mg/ml, 0.6mg/ml 1mg/ml.

Tambira parpam

Tambira parpam was mixed into nutrient broth to give a concentration of 0.2mg/ml, 0.6mg/ml and 1mg/ml.

Naka centuram

Naka centuram was extracted in water and was added to nutrient broth to give a concentration of 0.2mg/ml, 0.6mg/ml and 1mg/ml. 2% agar was added to all the drug impregnated nutrient broth solutions and autoclaved at 15 lbs for 15 minutes. The blank and drug impregnated nutrient agar slants were inoculated with a loopful inoculum and were incubated at room temperature (28-35°C) for 48 hours.

Manometry

Oxidation of glucose by *S. boydii* was studied at 30°C against Tambiraparvam using Warburg manometers (2) *S.boydii* was cultured in nutrient broth and was harvested in log phase at 10000 rpm at 4°C in refrigerated centrifuge. The cells were washed twice with cold double distilled water and suspended in Czapek dox medium (3) The concentration of the suspended cells as adjusted so as to give an optical density of one at 500mm in Bausch & Lomb spectronic 21 Spectrophotometer. The Warburg flask contained 2.8ml cell suspension in the main compartment, 0.2ml of 20% potassium hydroxide in the central well along with a roll of filter paper, 0.1ml glucose (1 μ mole) in the side arm and 0.1ml Tambira parpam chloramphenicol at a concentration of 1mg/ml was used as reference drug. The control flask contained glucose only manometers were equilibrated for 10 minutes before the glucose and drug were tipped into main compartment.

Results and Discussion

There was slight pH variation ± 0.2 in nutrient broth due to the addition of drugs. All the tested bacteria are reported to have a wide pH tolerance range for growth (4).

The result relating to Talaka mattirai is shown in Table. The drug inhibited the growth of *V.cholerae* and *S.faecalis* at a concentration of 0.6mg/ml and *B.subtilis* at a concentration of 1mg/ml. There are five ingredients in this formulation out of which three are plants and two are inorganic.

Iti vallati meluku inhibited the growth of *P.aeruginosa* at all the three tested concentrations while *V.cholerae* was inhibited at the concentration of 0.6mg/ml. (Table 2).

There are 16 ingredients in the preparation of *Iti vallati meluku* of which one is inorganic. Alcoholic extract of *Nigella sativa* Linn. (Ranunculaceae) an ingredient in *Iti vallati meluku* as already been reported to inhibit *E.coli* and *S. aureus* while petroleum ether extract was found active against *S.pyogenes. var aureus B.subtilis Dip. Pneumoniac* and *Step. Pyogenes*. Ethanol extract (50%) showed antiprotozoal activity against *Ent. Histolytica* strain STA (5).

Another ingredient of *Iti vallati meluku* namely *Saussurea lappa* C.B. Clarke (compositae) has strong antiseptic properties against *Streptococcus* and *Streptococcus* sp (6).

Tambira parpam inhibited the growth of *S. boydii* and *S.faecalis* at all the tested concentrations. Growth of *V.cholerae* was inhibited at the concentration of 0.6mg/ml and *S.citreus* and *B.subtilis* at 1mg/ml. (Table3). There are 5 ingredients in this formulation out of which 2 are inorganic and 3 are plants or their juices.

There was total inhibition of *S.boydii* at the concentration of 1mg/ml as revealed by manometric studies. The chloramphenicol inhibition was comparable to 0.6mg/ml *Tambira parpam* concentration (Fig.1)

Naka centuram showed activity against *S. citreus* and *S. Faecalis* at a concentration of 1mg/ml (Table 4). This formulation contains two inorganic materials and five plant products. Of the 5 plant products *Trachyspermum ammi* (Linn) spargue, *Curcuma longa* Linn. and *Achyranthes aspera* are reported to possess antibacterial activity (7,8).

Conclusions

All the four tested medicines exhibited antibacterial activity. *V.cholerae* was inhibited by *Talka mattirai*, *Tambira parpam* and *Iti vallati meluku*. *S.faecalis* was inhibited by *Talaka mattirai*, *Tambira parpam* and *Naka centuram*. The growth of *Sh. boydii* was arrested by *Iti vallati meluku* and *Tambira parpam*. *Naka centuram* and *Tambira parpam* inhibited the growth of *S.citreus*.

Fig 1

Oxygen uptake by *S. boydii* in presence of chloramphenicol and *Tambira parpam*.
The endogenous rate is subtracted.

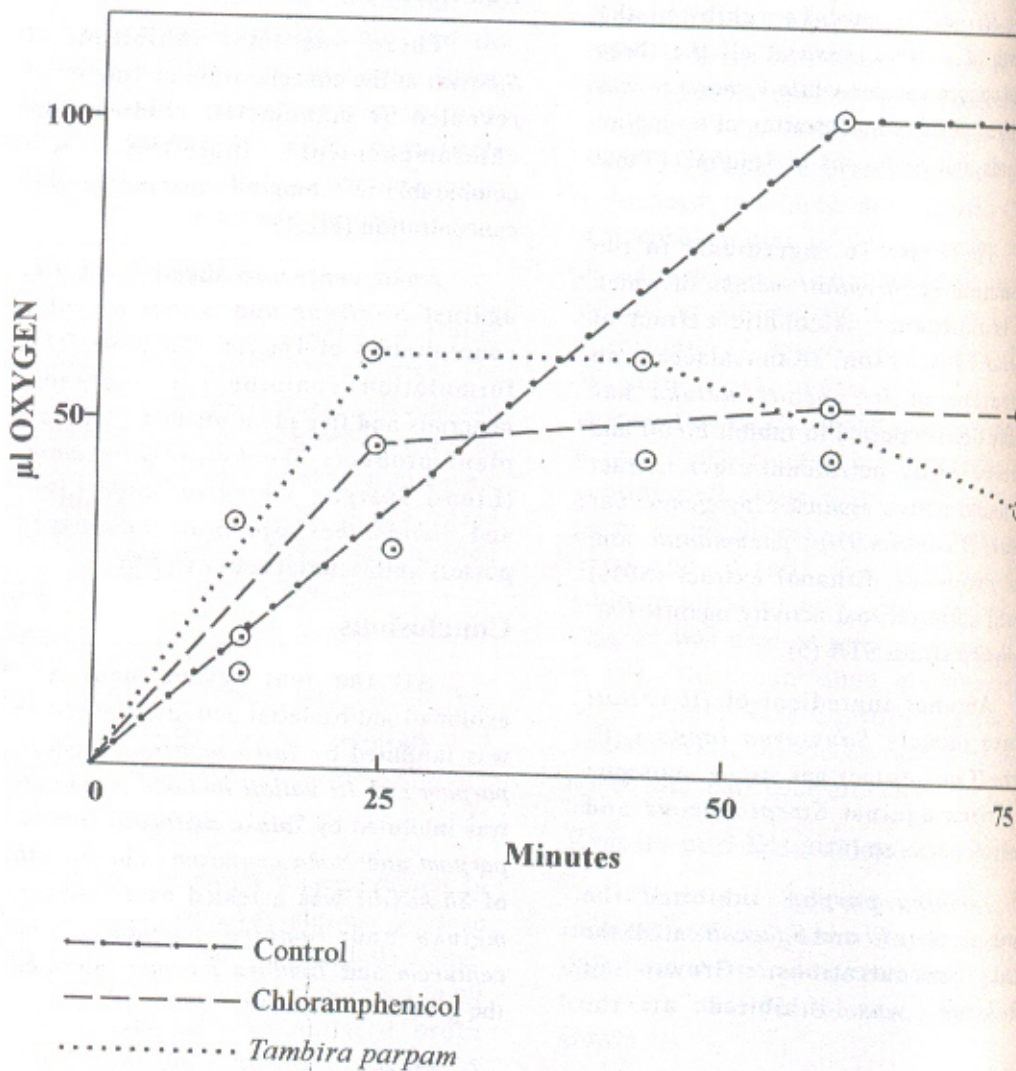


Table - 1
Antibacterial activity of *Talaka mattirai*

Bacteria	Control	1mg/ml	0.6mg/ml	0.2mg/ml
<i>S. aureus</i>	+	+	+	+
<i>S. citreus</i>	+	+	+	+
<i>S. faecalis</i>	+	-	-	+

B.subtilis	+	--	+	+
P. aeruginosa	+	+	+	+
E. coil	+	+	+	+
S.boydii	+	+	+	+
V.cholerae	+	-	-	+
Klebsiella Sp.	+	+	+	+

+ = Growth
-- = No Growth

Table – 2
Antibacterial activity of Iti vallati meluku

Bacteria	Control	1mg/ml	0.6mg/ml	0.2mg/ml
S. aureus	+	+	+	+
S.citreus	+	+	+	+
S.faecalis	+	+	+	+
B.subtilis	+	+	+	+
P. aeruginosa	+	-	-	-
E. coil	+	+	+	+
S.boydii	+	-	+	+
V.cholerae	+	-	-	+
Klebsiella Sp.	+	+	+	+

+ = Growth
-- = No Growth

Table – 3
Antibacterial activity of Tambira parpam

Bacteria	Control	1mg/ml	0.6mg/ml	0.2mg/ml
S. aureus	+	-	+	+
S. faecalis	+	-	-	-
B. subtilis	+	--	+	+
P. aeruginosa	+	+	+	+
E. coil	+	+	+	+
S. boydii	+	-	-	-
V. cholerae	+	-	-	+
Klebsiella Sp.	+	+	+	+

+ = Growth
-- = No Growth

Table – 4
Antibacterial activity of Naka centuram

Bacteria	Control	1mg/ml	0.6mg/ml	0.2mg/ml
S. aureus	+	+	+	+
S. citreus	+	-	+	+
S. faecalis	+	-	+	+
B. subtilis	+	+	+	+
P. aeruginosa	+	+	+	+
E. coil	+	+	+	+
S. boydii	+	+	+	+
V. cholerae	+	-	+	+
Klebsiella Sp.	+	+	+	+

+ = Growth
-- = No Growth

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