Antimicrobial Activity of Palmcandy against Throat Infection Causing Organisms

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Abstract: The present study deals with the antimicrobial activity of palmcandy against throat infection causing bacteria. Generally the throat infection is caused by *Streptococcus, Staphylococcus* and occasionally by *Candida, Escherichia coli* etc. The antimicrobial activity of some plant extract will not produce lethal effects to humans but they heal many infectious diseases. The palmcandy is taken for its antibacterial value in throat infection. It is used locally for treating throat infection. Disk diffusion method is carried out by swabbing the test sample in Muller Hinton agar plates, Whatmann filter paper disk No:1 Containing palmcandy extract are placed to examine their antimicrobial activity and kept it for incubation at 37°c for 24 hrs. On the basis of zone formation result is reported.

Keywords: Antimicrobial activity, palm candy, throat infection, antibiotics, Disk diffusion method.

Introduction:

The palm candy is a sweet and delicious product of palm tree. Sugar yielding palms are known to mankind for their economic potentialities. The palm botanically known as "Palmate" has been termed as the princess of vegetable kingdom. The family of palm contains some 1,100 species widely diffused over the globe, but they are common in the tropical countries and also around Bangladesh, China, Indonesia, Malaysia, Middle East, South Africa, Sri Lanka and etc. In India four varieties of palm dates are found, listed below,

(i) The Palmyrah palm [*Borassus Flabelli Fermis*]
(ii) The Date palm *[Phoenix sylvestris*]
(iii) The Coconut Palm [*Cocos nucifera*]
(iv) India sago palm[*Caryota urens*]

Palm trees thrive on non-agricultural lands, on the banks of streams, rivers and canals and in an undulating hill slopes and sandy land, which are unfit for cultivation.[1] Many efforts have been made to discover new antimicrobial compounds from various kinds of sources such as microorganisms, animals and plants. Screening of folk medicine may result in the discovery of novel effective compounds.[2] The palm candy has been used in the treatment of asthma, anemia, leprosy, throat infection and is used as a remedy for cough and cold.[3,4] The Antimicrobial activity of plant origin is not associated with many side effects and may have enormous therapeutic potential in treating many infections.[5]

Materials and Methods:

Isolation and identification of test pathogens:

The test pathogens used in this study include clinical isolates of *Escherichia coli, Staphylococcus aureus, Streptococcus pyogens, Shigella,* and *Candida albicans* isolated from the throat sample. The test throat samples were collected from the patients with throat infection at the Kovilpatti Municipal Hospital, Tamilnadu, India.

These test organisms *E. coli, Streptococcus, Staphylococcus Shigella* and *Candida albicans* isolated from the clinical specimen were serially diluted and plated onto selective media Eosin methylene blue agar, Blood agar**,** Salmonella Shigella (SS) agar and YPD agar respectively. These plates were incubated at 37°C for 24 hours. The above said microorganisms were also confirmed by bio-chemical tests. The *Candida albicans* was confirmed by Germ tube test.[6]

Antimicrobial testing of Palm candy:

The palm candy juice was collected in a sterile container from in and around Kovilpatti, Tamil Nadu, India. The antimicrobial activity of palm candy against studied pathogens was tested by disk diffusion method.[7,8] The selected palm candy was diluted and poured over the Whatman filter No. 1 disk in different ratios (2, 3, 4,5gm) and was left to dry in the hot air

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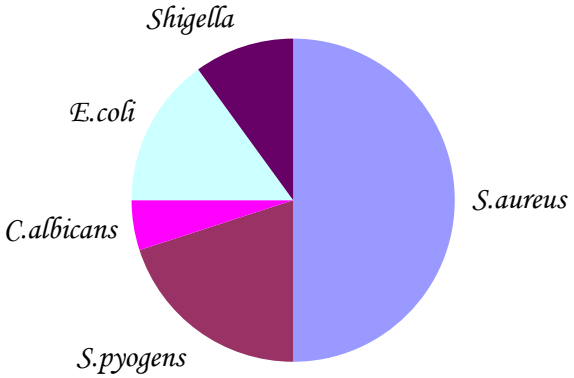
oven for few minutes. After the palm candy immersed disk was dried, it was placed in the Muller Hinton agar plate for testing its antimicrobial activity against the test pathogens.[9,10]

Fig. 1: The Percentage of Microorganisms present in the collected throat sample:



Result and Discussion:-

Antimicrobial activity of Palm candy against test pathogens:

The antimicrobial activity of palm candy against target pathogens was tested under aerobic conditions. Table 1 shows that the strongest inhibitory activity was found against *Streptococcus pyogens* (10-11mm) at the concentration of 5gm of Palm candy. Table 2 shows the maximum inhibitory activity (8-9mm) at concentration of 5gm palm candy against *Staphylococcus aureus*. Table 3 shows inhibitory activity (4-5mm) of 5gm of Palm candy against *Escherichia coli*. Table 4 and table 5 showed no inhibitory activity of Palm Candy against *Shigella* sp and *Candida albicans*.

Microorganisms develop resistance to many antibiotics and thus create immense clinical problem in the treatment of infectious diseases[8]. This resistance has increased due to indiscriminate use of antibiotics. This situation has forced the medical profession to constantly search for newer drugs[11,12]

Table 1: Antimicrobial activity of Palmcandy against *S. pyogens.*

S. No.	Test organisms	Concentration of Palmcandy (gms)	Diameter of zone in(mm)
1	*Streptococcus pyogens*	2	2-3
		3	5-6
		4	9-10
		5	10-11

Table 2: Antimicrobial activity of Palmcandy against *S. aureus.*

S. No.	Test organisms	Concentration of palmcandy(gms)	Diameter of zone in (mm)
2.	*Staphylococcus aureus*	2	2-3
		3	3-4
		4	5-6
		5	8-9

Table 3: Antimicrobial activity of Palmcandy against *E. coli.*

S.No	Test organisms	Concentration of palmcandy (gms)	Diameter of zone in(mm)
3.	*Escherichia coli*	2	1-2
		3	2-3
		4	2-3
		5	4-5

Table 4: Antimicrobial activity of Palmcandy against *Shigella.*

S. No.	Test organisms	Concentration of Palmcandy (gms)	Diameter of zone (mm)
4.	*Shigella*	2	No zone
		3	
		4	
		5	

Table.5: Antimicrobial activity of Palmcandy against *Candida.*

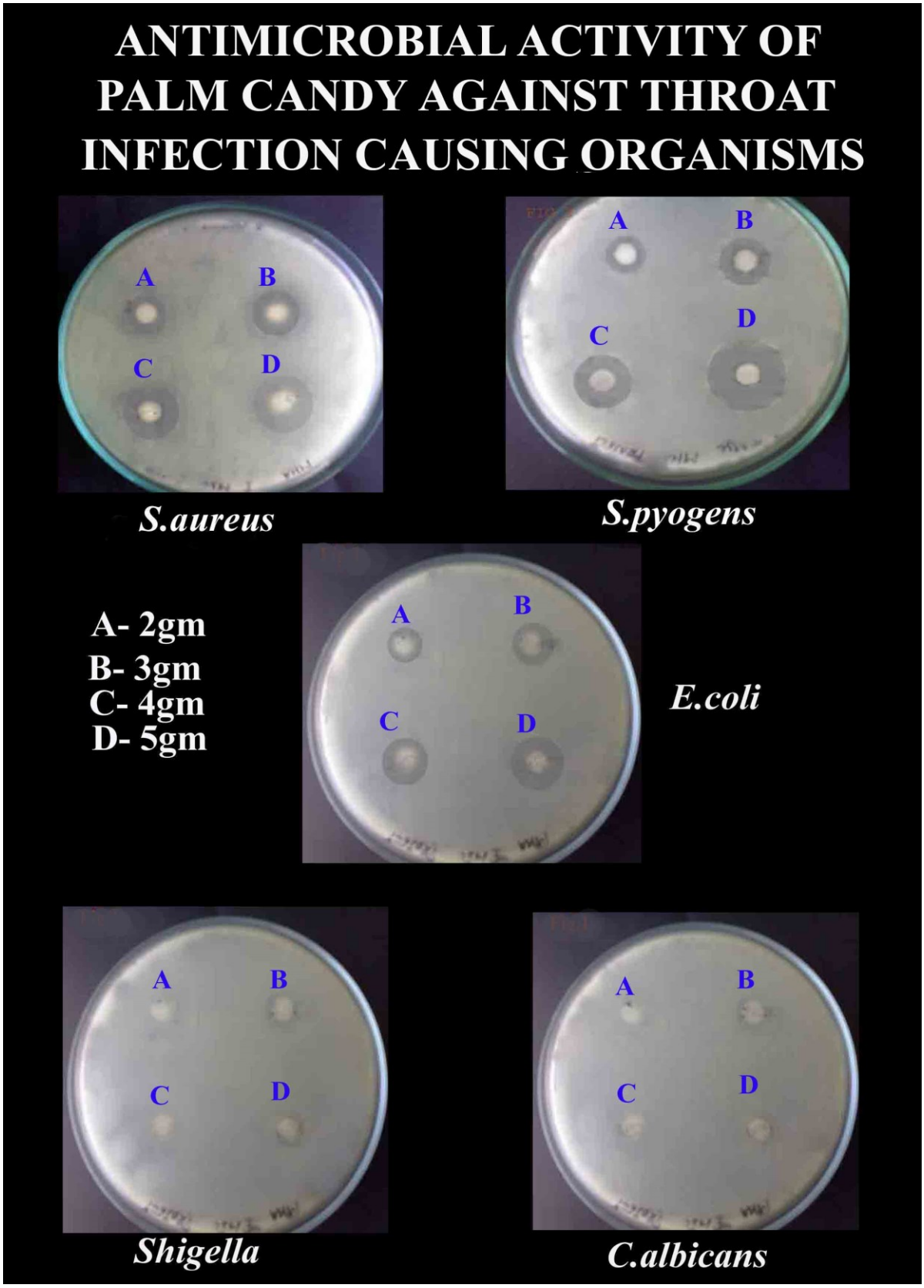
S. No.	Test organisms	Concentration of palmcandy (in gms)	Diameter of zone in (mm)
5.	*Candida albicans*	2	No zone
		3	
		4	
		5	

Table 6: Biochemical reaction of the test organisms:

Character	*S.aureus*	*S.pyogens*	*E.coli*	*Shigella*
Shape	Cocci	Cocci	Rod	Rod
Gram staining	Positive	Positive	negative	negative
Motility	negative	Negative	Positive	negative
Spore formers	negative	Negative	negative	_
Capsule formation	negative	Positive	negative	Negative
Hemolysis	Alpha(+)	Alpha(-), beta(+)	_	_
Acid production	Positive	Positive	Positive	Positive
Catalase test	Positive	Negative	Positive	Positive, negative
MR test	Positive	-	Positive	Positive
VP test	Positive	Negative	Negative	_
Indole test	negative	-	positive	Positive, negative
Alkaline phosphatase	Positive	Positive	-	-
Acetone production	Positive	-	-	-
Nitrate reduction	Positive	-	Positive	Positive
Urease production	Positive	-	Negative	-
Citrate test	-	Negative	negative	-
Gelatin test	-	Negative	negative	-
Mannitol test	-	Negative	positive	-

Conclusion:

This study shows that the Palm candy has certain antibacterial activities. Any how further studies are necessary to understand its anti microbial activity completely.


ANTIMICROBIAL ACTIVITY OF PALM CANDY AGAINST THROAT INFECTION CAUSING ORGANISMS
A
B
C
D
S.aureus
S.pyogens
A- 2gm
B- 3gm
C- 4gm
D- 5gm
E.coli
Shigella
C.albicans

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