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Invitro-Antimicrobial Activity of *Shirish Twak* (*Albizia lebbeck*)

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ABSTRACT

Staphylococcus aureus is primary pathogen of humans and also of animals, and its infections are found throughout the world. It causes many clinical conditions such as skin infections, pyogenic infections and systemic infections like bacteremia, osteomyelitis, septic arthritis, endocarditis, pneumonia, meningitis, deep seated abscess, and also toxin mediated infections like food poisoning, toxic shock syndrome, staphylococcal scalded skin syndrome. Human cases and carriers are reservoir of this infection. This bacterium has penicillin and methicillin resistance. 7.7 million deaths around the world were found linked to bacterial infection. That is 13.6%, or 1 in 8, of all global deaths. This makes bacterial infections the second leading cause of death globally. There are large differences in burden as well as distribution of bacterial pathogens across regions. As there is no effective immunization with toxids or bacterial vaccines against S.*aureus*. The drug Shirish (*Albezia lebbeck*) is coated as superior amongst all anti-poisons drugs by *Acharya Charaka*, *Shirish* is having properties like *Vishagna, Kandughna, Kshtaghna, Charmarogahara, Varnya karma,* and having chemical compositions like saponins, tannins, d-catechin, d-leucocyanidin, frieedlan-3-one and y-sitosterol and these possess antioxidant anti-inflammatory, anti-allergic actions. So, this drug is selected for study.

Key words: *Staphylococcus aureus (S. aureus), Shirisha, Albezia lebbeck, Antibiotic resistance, Vishaghna.*

INTRODUCTION

Staphylococcus aureus is one of the leading pathogens for deaths associated with antimicrobial resistance and the emergence of antibiotic resistance strain such as methicilin resistant, penicillin resistant. S. *aureus* is a worldwide problem in clinical medicine, till now no vaccine for S.*aureus* has been approved.

It causes skin as well as upper respiratory tract infection, the skin infections like pimples, impetigo, boils, cellulitis, folliculitis, carbuncle and toxin mediated diseases like food poisoning, toxic shock syndrome, scalded skin syndrome and abscess wound infection following the surgery.[1] Complications like bacterial pneumonia, septicemia, arthritis, meningitis etc S. *aureus* strain these bacteria have resistance to antibiotics and re-occurrence rate is also very high.

As there is no permanent solution for S.*aureus* bacterial infection its need of hour to search effective and safe treatment. Hence the study is taken up to know the efficacy of *Shirisha Twak* in *Staphylococcus aureus* bacteria. As *Shirisha* is having properties like *Tiktha, Kashaya, Madhura Rasa, Katu-Vipaka,* and having *Vishaghna, Kushtaghna, Charma Rogahara, Kandughna, Varnya, Vrunahara, Shothahara*[2] properties, and chemical composition like saponins, tannins, d-catechin, d-leucocyanidin, frieedlan-3-one and y-sitosterol and these possess antioxidant anti-inflammatory, anti-allergic so this drug is selected.[3]

AIM AND OBJECTIVES

1. To study in detail about the drug *Shirisha*.
2. To know the effect of *Shirisha Twak* action against microbes; mainly on *Staphylococcus aureus*

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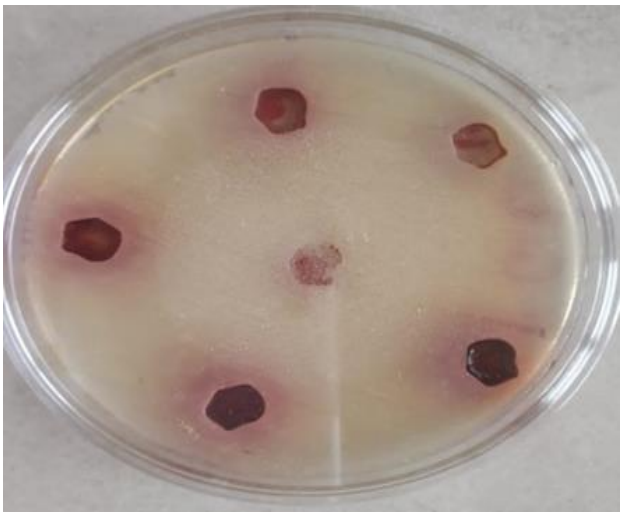
Materials and Methods

- Collection of *Shirish Twak* from authenticated source and identified by the expert.
- Collection of sample collection of secretion/flakes from affected part of skin and to isolate the *Staphylococcus aureus.*
- Preparation of extract out of stem bark of Shirish drug by using 35ml alcohol and 15ml water.
- In vitro Antibacterial activity will be conducted by using Agar cup method. Biocidal activity will be carried. The bacterial activity of the extracts is determined by using the agar well diffusion technique. Mueller-Hinton agar plates were seeded with 0.1 ml of overnight culture of *Staphylococcus aureus*, Escherichia coli respectively, allowed to incubate for 24 hours. Cups were made in Petri plate using sterile cork borer (0.85 cm) and different concentrations of the extract is added into each well. Then bacterial plates were incubated at 37°C for 24 hours.
- Each test compound has got six bores which corresponds to 6 concentrations that is 100, 75, 50, 25, 10, 5 for which zone of inhibition diameter and mean values are determined and recorded as diameter in mm.

Shirish Plant

Prepared Powder

Sample Collection



Microbial Study

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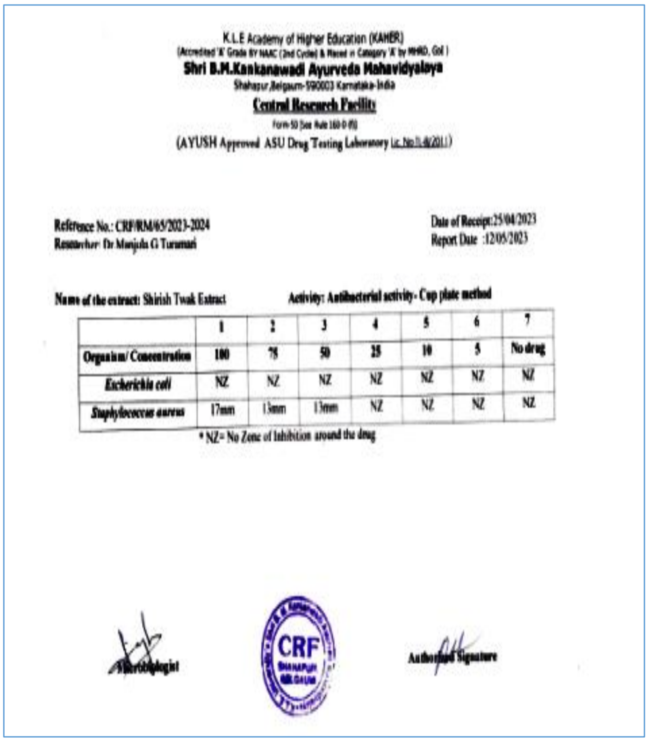
Antimicrobial Activity Study Report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Reference No.: CRF/RM/65/2023-2024
Researcher: Dr Manjula G Turamari

Date of Receipt:25/04/2023
Report Date :12/05/2023

Name of the extract: Shirish Twak Extract
Activity: Antibacterial activity- Cup plate method

	1	2	3	4	5	6	7
Organism/ Concentration	100	75	50	25	10	5	No drug
Escherichia coli	NZ	NZ	NZ	NZ	NZ	NZ	NZ
Staphylococcus aureus	17mm	13mm	13mm	NZ	NZ	NZ	NZ

* NZ= No Zone of Inhibition around the drug

Results

The drug Shirish Twak extract at 100mg concentration has shown maximum inhibition of 17mm and for 75mg and 50mg concentration 13mm inhibition against *Staphylococcus aureus* bacteria.

In addition to the research project, same sample was studied for *Escherichia coli*; but drug has not shown any inhibition against Escherichia coli.

Discussion

This study revealed that the bark extract of *Albizia lebbeck* possesses significant antimicrobial activity against *Staphylococcus aureus*. It implies that bark extract could be used in the wide range of S.*aureus* infections. In this microbial study observed that the bark extract of *Albezia lebbeck* had no inhibitory action on *Escherichia coli*.

Staphylococci are primary pathogens of humans and animals.

Staphylococcal infections are found throughout the world and one-third of the adult population is asymptomatic carrier and may cause many nosocomial infections during health care service. S. *aureus* doesn't lead lifelong immunity. Hence, causes repeated infections in susceptible hosts.

Shirish is having the properties[4] of *Tikta, Kashaya, Madhura, Katu Rasa Laghu, Tikshna* and *Ruksha Guna, Katu Vipaka, Tridosha Shamaka, Vishagna, Kandugna, Kusthagna, Shothahara Vedanasthapana,* predominantly pertaining the action against S.*aureus* and also contains high catechins in the form of flavonoids might reduce the inflammatory response by inhibiting the degradation of *Ach* (anti cholinergic). The major phytochemicals[5] like alkaloids, flavonoids, saponins present in the stem bark of *Albezia lebbeck* significantly inhibits the activity of S.aures bacteria.

Conclusion

The *Staphylococcus aureus* is a gram positive staphylococcus geneus bacteria, most importantly causes a spectrum of clinical diseases. The *Shirish* (*Albezia lebbeck*) *Twak* is having the major phytochemicals like alkaloids, flavonoids saponins etc. helps to significantly inhibit the activity of S.aures bacteria. As the drug *Shirish* is abundantly and easily available, cost effective, have many simple formulations, can be used both internal and external on human body. In this microbial study *Shirish Twak* extract at 100mg concentration has shown maximum inhibition of 17mm. *Shirish Twak* extract at 75mg and 50mg concentration shows 13mm inhibition against *Staphylococcus aureus* bacteria.

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References

1. www.wikipedia.org
2. https://www.easyayurveda.com/2012/12/26/shirisha-albizia-lebbeck-uses-medicinal-qualities-ayurveda-details/
3. https://www.iafafoallergy.com>shirish

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4. Acharya Priyavat Sharma, Kaideva Nighantu, edited by Guruprasad Sharma edition-1676; Varanasi, Chaukambha Publication; Aushadhi Varga Adhyaya 1, shloka.no.673-675, p.no.180

5. Harmeet Kour and Inderpal Kaur. Shirish as an Antidote in Ayurveda, International Journal of Ayu Pharm Chem.

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