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ANTI-MICROBIAL ACTIVITY OF SIDDHA HERBAL PREPARATION PERUMPEELAI VER KUDINEER

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ABSTRACT

Siddha was one of the traditional medicines from ancient days. The Siddha system was largely therapeutic & prophylactic in nature. The aim of the work is to prove the anti-microbial activity of the PERUMPEELAI VER KUDINEER (PKC). It is mainly indicated for urolithiasis mentioned in Gunapadam mooligai vaguppu siddha text book. This drug was tested for anti-microbial property against both Gram+ve and Gram-ve organism such as *Staphylococcus aureus, Bacillus subtilis, Pseudomonas aeruginosa, E.coli, Klebsilla pneumonia*. It was screened for anti-microbial activity in two extracts like aqueous & methanol were carried out in 50μl & 100μl concentration. PKC shows highly sensitive in *Klebsiella pneumonia.* The result obtained from the study shower that Perumpeelai ver kudineer has anti-microbial property against *Klebsiella pneumonia(15mm)* was more effective. This organism is commonly affected in genito urinary system.

KEYWORD: Anti-microbial activity, Perumpeelai ver kudineer, Aerva javanica, Urolithiasis.

INTRODUCTION

Siddha medicine is the one of the ancient system of medicine, initialy to treat the infections with herbs(mooligai) and next to prescribe an Inorganic (thathu) & animal products(jeevam) products. Many of the Siddha formulation possess the herb which has anti-microbial activity helps to treat acute & chronic infections. Siddha had single & poly herbal preparations have

disease range of bioactive molecules & play a dominant role in the maintenance of human health since ancient times. Bacterial infection is the one of the most serious global health issues. WHO has determined anti-microbial resistance as public health problem around the world causing increase of morbidity & mortality. This article discusses the anti-microbial activity & results of Siddha drug Perumpeelai ver kudineer mentioned in Gunapadam Mooligai Vaguppu-pg.no 687[6] in the treatment of Urolithiasis.

II. TAXONOMY (Integrated Taxonomic Information System).[2]

Figure 1: Perumpeelai Herb.

Kingdom	: Plantae
Sub Kingdom	:Viridiplantae
Infra Kingdom	:Streptophyta
Super division	:Embryophyta
Division	:Tracheophyta
Subdivision	:Spermatophyta
Class	:Magnoliopsida
Superorder	:Caryophyllanae
Order	:Caryophyllales
Family	:Amaranthaceae
Genus	:Aerva
Species	:Aerva javanica

MORPHOLOGY

A perennial, suffruticose, hoary-tomentose, erect to scandent dioecious conspicuous under shrub, 0.6m tall found almost throughout plains of India. The stem is terete, much branched, as thick as gooseuill, coverd with a thick, easily detachable stellate tomentum, wolly at the base, herbaceous above, tomentose. The leaves is simple, alternate, variable, 2.5-6.3cm. by

316mm, sessile or sub sessile, shape cuneate to attenuate, ape-obtusely apiculate, margin entire, densely tomentose pale white; petiole 0.5-cm hairy. An inflorescence is stalked, spikes 2.5-18cm long, white, wolly, elongate, linear or oblong; often forming leafless terminal paniculate up to 5cm. The flower is unisexual, dense, usually dioecious, dull white, sessile. The bracts and bracteoles is broadly ovate, white, 3mm long, apex acute, hyaline. The male flower is seems to be very rare, perianth rather more than .5mmlong, elliptic-oblong, sub obtuse, wooly at the back. The female flower is tepals 5, perianth 2.5mm long, obovate-oblanceolate or spathulate, base sub acute, apex apiculate, tomentose without; outer 2 larger with ceasing midrib below the apex, inner 3 smaller with thick green midrib. filaments reduced, anthers absent.[4]

III. MATERIALS

3.1 Collection of raw drug

The Perumpeelai root (Aerva javanica) was collected in and around the areas of palayamkottai and Tirunelveli. The plant will be identified and authenticated by the medical botanist experts at Government Siddha Medical College and Hospital Palayamkottai.

PREPARATION OF FORMULATION

Unnecessary parts of roots were removed. And it is dried in shade and processed to fine powder. Finally the powder was sieved using cloth it is stored in air tight container.

Culture of pathogens

The microbial strains used in the sensitivity assay were Staphylococcus aureus (MTCC 916), Bacillus subtilis (MTCC 1134), Pseudomonas aeruginosa (MTCC 714), E.coli (MTCC 167), Klebsilla pneumonia (MTCC 530). The test microorganism used for antimicrobial analysis. Microbial strains were purchased from Microbial Type Culture Collection and Gene Bank(MTCC) Chandigarh. The bacterial strains were maintained on Nutrient Agar (NA).

Standard controls

The standard drugs used as control were Streptomycin(S25) for anti-bacterial study.

METHODS

Test procedure

The anti-microbial study was conducted at Inbiotics. William hospital campus, MS road, Nagarcoil, KK district, Tamilnadu.

Cleansing and Sterilization

The glass-wares used cleaned with cleansing solution and sterilized in hot air oven to 180°C for 3 hours. All nutrient media were sterilized by autoclave(121°C, 15psi for 15-20 mins).

Preparation of test drug samples

1 gram of test drug was diluted in 1ml of distilled water and methanol respectively. The percolation time was 5-7 days. The sample thus prepared in methanol was stored in room temperature and aqueous extract in 4°C to avoid the fermentation of the sample. Then extracts were subjected to anti-microbial assay.

Antimicrobial Test

The medium was prepared by dissolving 38 g of Muller Hinton Agar Medium (Hi Media) in 1000 ml of distilled water. The dissolved medium was autoclaved at 15 Lbs pressure at 121^0C for 15 min (pH 7.3). The autoclaved medium was cooled, mixed well and poured petriplates (25 ml/plate) the plates were swabbed with Pathogenic Bacteria culture. Finally, The Sample or Sample loaded Disc was then placed on the surface of Mullar-Hinton medium and the plates were kept for incubation at 37°C for 24 hours.

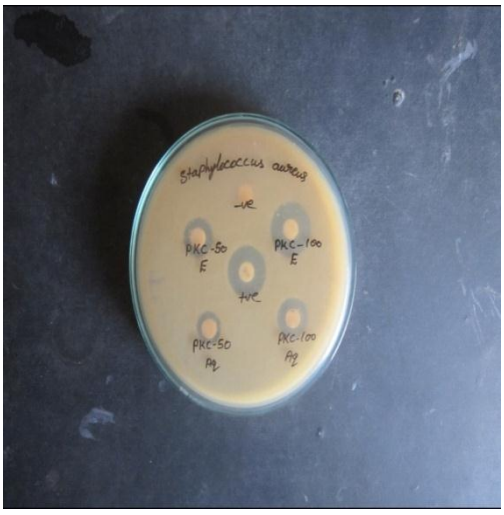

Fig no:2 Staphylococcus auerus.

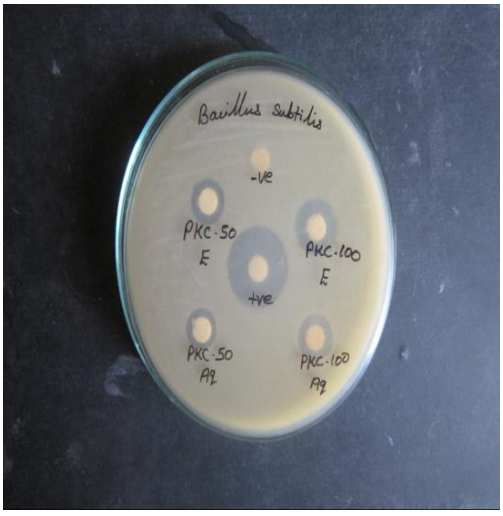

Fig no:3 Bacillus subtilis.

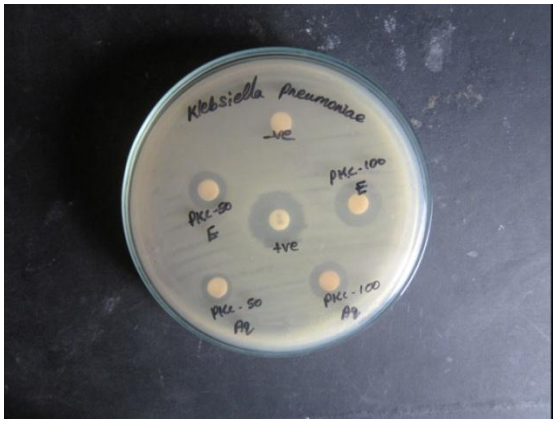

Fig no:4 Klesiella pneumoniae.

Fig no: 5 Pseudomonas aeruginosa.

Fig no: 6 E.coli.

V. RESULTS AND DISCUSSION

At the end of incubation, inhibition zones were examined around the disc and measured with transparent ruler in millimeters. The size of the zone of inhibition (including disc) was measured in millimeters. The absence of zone inhibition was interpreted as the absence of activity (Kohner *et al*., 1994; Mathabe *et al*., 2006).[3,4] The activities are expressed as resistant, if the zone of inhibition was less than 7 mm, intermediate (8-10 mm) and sensitive if more than 11 mm (Assam *et al*., 2010).[1]

Table No. 1: Anti Bacterial activity against Gram Positive Bacteria.

Sample Code	Strains Name				
	***Staphylococcus aureus* (G+) MTCC 916**	**Bacillus subtilis (G+) MTCC 1134**	***E.coli* (G-) MTCC 1671**	**Pseudomonas aeruginosa (G-) MTCC 741**	***Klebsilla pneumonia* (G-) MTCC 530**
PKC.E.50	-	7	-	10	13
PKC.E. 100	-	9	-	12	15
PKC. E Aq. 50	-	-	-	8	10
PKC. E Aq. 100	-	7	-	10	12
PC	-	21	-	17	18
NC	-	-	-	-	-

PC (Bacterria) - ***Positive control (Streptomycin- S 25)***

PC (Fungi) - ***Positive control (fluconazole)***

NC - ***Negative (plain disc)***

- - ***No Zone***

Mm - ***Millimetre***

G+ - ***Gram Positive***

G- - ***Gram Negative***

IN ETHANOLIC EXTRACT

➢ As per table no.1&Fig 2-6, the ethanol extract of 100μl in G –ve strains shows more inhibition in the order of *Klebsiella pneumonia(15mm*) followed by *Pseudomonas aeuroginosa(12mm*). *E.coli* posses no activity.The ethanol extract of 100μl in G+ve strains shows inhibition in the order of *Bacillus subtilis(9mm*)followed by *Staphylococcus aureus & E.coli* posses no zone of inhibition.

➢ As per table no.1&Fig 2-6, the ethanol extract of 50μl in G -ve strains shows more inhibition in the order of *Klebsiella pneumonia(*13mm) followed by *Pseudomonas aeuroginosa(10mm). E.coli* posses no activity. The ethanol extract of 100μl in G+ve strains shows inhibition in the order of *Bacillus subtilis(7mm*) followed by *Staphylococcus aureus & E.coli* posses no zone of inhibition.

IN AQUEOUS EXTARACT

➢ As per table no.1 & Fig 2-6, the aqueous extract of 100μl in G -ve strains shows more inhibition in the order of *Klebsiella pneumonia(12mm*) followed by *Pseudomonas aeuroginosa(10mm*). E.coli posses no activity.The ethanol extract of 100μl in G+ve strains shows inhibition in the order of *Bacillus subtilis(7mm*)followed by *Staphylococcus aureus & E.coli* posses no zone of inhibition.

➢ As per table no.1&Fig 2-6, the aqueous extract of 50μl in G -ve strains shows more inhibition in the order of *Klebsiella pneumonia(10mm)* followed by *Pseudomonas aeuroginosa(8mm*). E.coli posses no zone of inhibition.The ethanol extract of 100μl in G+ve strains shows no zone of inhibition in the order of *Bacillus subtilis*, *Staphylococcus aureus* & *E.coli.*

CONCLUSION

The siddha formulation of Perumpeelai ver kudineer chooranam(PKC) has promising action in the management of opportunistic infections of urolithiasis caused by both Gram positive as well as Gram negative organism in urolithiasis patients (Table no 1). PKC showed highly sensitive inhibitory actions against *Klebsiella pneumonia(15mm)* and other organisms are moderate inhibitory effects.

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