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COMPARATIVE EVALUATION AND ANTIMICROBIAL ACTIVITY ANALYSIS OF NATURALLY PREPARED KUZHITHAILAM AND COMMERCIALY AVAILABLE KUZHITHAILAM FROM *INDIGOFERA ASPALATHOIDES* VAHL EX DC (SHIVANR VEMBU)

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### Abstract

The plant, *Indigofera aspalathoides* is commonly called as 'Sivanar Vembu' in Tamil. This plant belongs to a family fabaceae. Its having more medicinal properties. The present study was undertaken to assess the antimicrobial properties of naturally produced *Indigofera aspalathoides* in comparison with commercially available Product. The antibacterial activity was carried out by using agar diffusion method against human pathogens, such as *Klebsiella pneumoniae* MTCC 109, *Vibrio cholera* ATCC 14035, *Micrococcus luteus* ATCC 14452 and *Staphylococcus aureus* MTCC 96. The present study showed that the natural product has significant antimicrobial activity when compared to commercially available Product.

**Key words:** *Indigofera aspalathoides*, Antimicrobial, Kuzhithailam, Comparison.

### Introduction

Plants are more important in human's life and fulfil his every day's needs. They are used as cosmetic, food, flavours, ornamental and medicine. The higher plants are used to treat a number of infectious diseases around the world. They provide an innumerable of natural products, which are used in extensive applications in combating the diseases. Medicine is used for treating diverse ailments. Malaysia possesses an immense number of medicinal plants[9]. Even if medicinal plants are used and distributed throughout the world, they are more plentifully present in tropical

N. Tamilselvi \* et al. /International Journal Of Pharmacy&Technology countries like Malaysia. These medicinal plants are one of the best resources for the invention and development of novel bioactive substances[13]. Several studies indicated that medicinal plants contain substances like peptide, unsaturated long chain fatty acids, aldehydes, alkaloids, essential oils, phenols and water or ethanol soluble compounds. These compounds are potentially significant in therapeutic applications against human and animal pathogens, including bacteria, fungi and viruses[5,6].

*Indigofera aspalathoides* Vahl ex DC (Fabaceae), commonly called Shivanarbembu in Tamil is a low undershrub with copiously spreading terete branches found in South India and Sri Lanka. The plant has been traditionally used for several medicinal purposes. Its leaves, flowers, and tender shoots are said to have cooling effect and are demulcent, they are used in the form of decoction for leprosy and cancerous affections (7). The leaves are applied to abscesses. The whole plant is used in the treatment of tumors and the ashes are used in the preparation of medicines for dandruff. The decoction of the plant is given as an alternative choice for the treatment of secondary syphilis (1). The whole plant is used as antileprotic, anti-inflammatory, and antipsoriatic agent (Khare 2007). From the scientific literature, it was found that this plant possess an antiinflammatory, antimycobacterial, antiviral, antiarthritic, and antitumor activity against Dalton's ascitic lymphoma and chemopreventive activity against N-nitrosodiethylamine induced phenobarbital-promoted liver tumors (2,4,11,12,10). Hence, in this present study an attempt has been made to study the antimicrobial properties of Natural *Indigofera aspalathoides* in comparison with commercially available Product of *Indigofera aspalathoides* kuzhithailam

## **Materials and Methods**

### **Preparation of Natural Kuzhithailam from *Indigofera aspalathoides***

The plant was collected in to the pot and allowed for extraction process. The pot was tightly sealed with clay& make a Pit for keeping the pot .The Sealed pot should be placed above the collecting vessel and the Pit was closed after the pot kept over the collecting vessel .Then the Pot were covered by cow dung flakes and lighted. The sample was processed and the kuzhithailam was collected in the sterile vessel. The steps are showed in Fig 1.

Figure 1: Kuzhithailam prepared from *Indigofera aspalathoides*



A. *Indigofera aspalathoides*



B. Covered pot



C. Pot for Extraction



D. Sealed with Clay



E. Sealed pot placed above the collecting vessel



F. Pit is closed



G. pot is covered with Cow dung flakes and lighted.



H. kuzhithailam is collected In the sterile vessel

## Preparation of Commercial product of Kuzhithailam

The composition of commercial product is *Indigofera aspalathoides* ( Shivani)125 mg , *Celastrus paniculatus* ( Jyotismati ) 25 mg, *Bryonia epigoea*( Mahamunla ) 125 mg , *Cinamomum Camphora*( karpoom):125mg.From this product the concentration of 100 µl was prepared for antibacterial activity.

### Antimicrobial activity

Antimicrobial activity was checked by agar gel diffusion method. The cultures were grown in nutrient broth and incubated at 37°C for 24 hours.The Bacterial strains used in this study were *Klebsiella pneumoniae* MTCC 109, *Vibrio cholera* ATCC 14035, *Micrococcus luteus* ATCC 14452 and *Staphylococcus aureus* MTCC 96. The 0.1 ml of the culture was seeded in 25 ml nutrient agar butts, mixed and poured into sterile petri plate and allowed to solidify. The wells were bored with 8mm borer in seeded agar. Then the particular concentrations (25µl,50µl,75 µl ,100 µl) of *indigofera aspalathoides* thailam sample andcommercial available product of same plant thailam extracts were added in each well. After it normalized to room temperature, plates were incubated at 37°C for 24 hours. The zone of inhibition was measured and recorded after the completion of incubation period. *Determination of minimum inhibitory concentration (MIC)*. The minimum inhibitory concentration (MIC) is the smallest concentration of antibacterial compound that prevents development of visible growth of a pathogen.MIC was quantified as the number of cfu on agar plates, following the viable counting method of Cappuccino and Sherman (1997),.after incubation for 24 h at 30°C.

### Result and Discussion

Comparison of the antibacterial activity of *Indigofera aspalathoides* kuzhithailam and commercially available Product by Agar diffusion method (Table 1) was done.

**Table 1: Plant product.**

Organisms	Zone of Inhibition Concentrations (µl)			
	25	50	75	100
<i>Klebsiella pneumoniae</i> MTCC 109	33	36	*	*

<i>Vibrio cholera</i> ATCC 14035	*	*	*	*
<i>Micrococcus luteus</i> ATCC 14452	29	33	35	35
<i>Staphylococcus aureus</i> MTCC 96	30	35	35	36

**Commercial product:**

Organisms	Zone of Inhibition Concentrations (µl)			
	25	50	75	100
<i>Klebsiella pneumoniae</i> MTCC 109	-	-	12	13
<i>Vibrio cholera</i> ATCC 14035	-	-	14	16
<i>Micrococcus luteus</i> ATCC 14452	-	12	12	12
<i>Staphylococcus aureus</i> MTCC 96	-	-	-	-

\*: Not measurable; - No Zone formation

Around 25µl, 50µl, 75 µl, 100 µl of naturally prepared *Indigofera aspalathoides* Kuzhithailam showed 33mm, 36mm and not measurable value zone of inhibition respectively on *Klebsiella pneumoniae* MTCC 109 strain, 29mm, 33mm, 35mm,35mm respectively for *Micrococcus luteus* ATCC 14452 ,30mm,35mm,35mm,36mm for *Staphylococcus aureus* MTCC 96 and high activity in *Vibrio cholera* ATCC 14035 .At concentration of 25µl, 50µl, 75 µl, 100 µl commercial available Product showed minimum zone of inhibition of all four microorganisms. In this commercial product prepared by using *Celastrus paniculatus* ( Jyotismati ), *Bryonia epigoea*( Mahamunla ),*Cinamomum Camphora*( karpoooiderm) with *Indigofera aspalathoides* but the naturally prepared our *Indigofera aspalathoides* thailam not used additional component. Our result showed maximum activity against human pathogens. This can be used as a medicine.

Since Ayurvedic System of Medicine has a long history of therapeutic potential, it can be used as a logical approach to drug discovery,to screen the traditional natural products such as *Indigofera aspalathoides* which shows a scientific proof of its superior antimicrobial potential.

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