

## Antibacterial Activity of *Leptadenia reticulata* (Retz.) Wight. & Arn. (Asclepidaceae)

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**Abstract:** *Leptadenia reticulata* of Asclepidaceae family is a shrub, originally property of Petroleum ether, Alcohol & Chloroform extract of *L. reticulata*. The antimicrobial testing was carried out by "Disc diffusion method". Amongst the tested three extracts, chloroform extract showed high antimicrobial activity against *E. coli*, alcoholic extract showed high antibacterial activity against *Pseudomonas aeruginosa*, while Petroleum ether extract showed antibacterial activity against *Klebsilla pneumoniae*.

Key words: *Leptadenia reticulata*; Asclepiadaceae; Medicinal plant; Antimicrobial activity.

### INTRODUCTION

*Leptadenia reticulata* (Retz.) Wight. & Arn. of (Asclepidaceae) is an important twining medicinal shrub possessing abundant alkaloids (Anonymous 1962). It is an Indian medicinal plant used since 4500 BC. The whole plant ameliorates "tridoshas" and is of great value in general debility, involuntary seminal discharge, as a stimulant (Dandiya & Chopra, 1970), abortifacient, tonic, restorative, bactericidal, antifibrifuge, wound healer and in mouth ulcer (Vaidya, 1965). Roots are used in many ayurvedic/ herbal formulations (Anon, 1978) as a cure for ear, nose, and skin infection and general debility (Kirtikar & Basu, 1998). It is also used for increasing milk-yielding capacity in cattle (Anjaria & Gupta, 1967, and Anjaria et al., 1975) and to increase the egg laying capacity of hen in poultry industry. Flowers are good for eye sight. This plant has great demand in both the local as well as the international market, at Rs.211/- per Kg of dry powder. The flowers and tender leaves are used as vegetable (Shortt, 1887) and to make bread (Gammie & Alexander, 1992).

According to ayurveda, it is a tonic given for weak debility and such similar conditions. Commonly given for those suffering from weak debility or a lack of energy gives general strength to the body. A cooling, mucilaginous, demulcent with light strengthening and tonic properties traditionally used in the treatment of seminal discharges and snake bite (Batt, et al., 2006).

### MATERIALS & METHODS

The plant material was identified by the taxonomists of the Botanical survey of India, Coimbatore, southern circle. After authentication, fresh aerial parts were collected in bulk from young matured plants from the Western Ghats (KMTR) of southern India (BSI Herbarium No: 1057; 1058; 55103; & 54373). During early summer, washed shade dried and then milled into fine powder by a mechanical grinder. About 500 Gms of powdered plant material was taken in digestion flask fitted to the Soxhlet apparatus to extract bioactive compounds using alcohol, petroleum ether, and chloroform. The solvent was then removed under reduced pressure, to yield a greenish black sticky residue. The collected extracts were stored at 4°C and they were used in the present study. The microorganisms used in the present study include *Staphylococcus aureus*, *E. coli*, *Pseudomonas aeruginosa*, *Streptococcus pyogenes*, *Salmonella typhi*, *Serratia marcescens*, *Klebsiella pneumoniae*, *Staphylococcus epidermidis*, *Proteus vulgaris* and *Bacillus cereus*. Suitable strains of these microorganisms were procured from the Laboratory P.G. and Research Department of Microbiology, Sriparamakayani College, Alwarkurichi, South India. Antibacterial activities were studied by agar disc diffusion method (Cruickshank, 1988).

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**RESULTS & DISCUSSION**

The result of antimicrobial activity of the different extract from *L. reticulata* has been presented in **Table 1**. The reference antibiotic **chloramphenicol** showed the highest antimicrobial activity against all tested microorganism. It was observed that *E. coli* and *Staphylococcus aureus* were most sensitive to the Chloroform extract and *E. coli*, *Proteus vulgaris*, *Bacillus cereus* and *Klebsiella pneumoniae* were moderately sensitive to the petroleum ether extract. Alcohol extract exhibited significant antibacterial activity against *Pseudomonas aeruginosa*, *B. cereus*, *S. epidermidis* and *P. vulgaris*. Similar reports showed that the aqueous extract of *L. reticulata* has significant antimicrobial activity against the gram positive bacterial (*S. aureus*, & *B. subtilis*), gram negative bacterial (*K. pneumoniae*, & *E. coli*) (Esimone, et al., 1999). Alcoholic (50%) extracts from roots, leaves and stem of *L. reticulata* showed antibacterial activities against *S. aureus*, *Pseudomonas aeruginosa*, *B. cereus*, and *P. vulgaris* are used as anesthetic (Sivaraja &

Balachandran 1994).

This work has highlighted the antimicrobial effects of *L. reticulata* on some of the medicinally important human pathogens. Recently, much attention has been diverted towards extracts and biologically active compounds isolated from popular plant species. The use of medicinal plants play a vital role in covering the basic health needs in developing countries, and these plants may offer a new source of antibacterial, antifungal and antiviral agents with significant activity against infective microorganisms (Mun oz Mingarro et al 2003, & Coelho de souza et al., 2004).

From this study we can conclude that the traditional use of *Leptadenia reticulata* for the treatment of infections diseases is promising, mainly against bacteria. Purification of the bioactive components from the extracts is underway and further investigations may improve

**Table 1:**  
**Antimicrobial activities of *Leptadenia reticulata*.**

	<b>Chloroform Extract</b>	<b>Alcohol Extract</b>	<b>Petroleum ether Extract</b>
<i>Serratia marcescens</i>	00.000	00.000	08.000
<i>Klebsiella pneumoniae</i>	21.000	00.000	22.000
<i>Pseudomonas aeruginosa</i>	00.000	12.000	00.000
<i>Escherichia coli</i>	22.000	00.000	20.000
<i>Salmonella typhi</i>	00.000	00.000	00.000
<i>Staphylococcus aureus</i>	20.000	00.000	17.000
<i>Bacillus cereus</i>	11.000	10.000	14.000
<i>Staphylococcus epidermidis</i>	00.000	08.000	00.000
<i>Streptococcus pyogenes</i>	00.000	00.000	00.000
<i>Proteus vulgaris</i>	17.000	06.000	21.000

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