

## ANTIBACTERIAL ACTIVITY OF LEAVES OF *BLECHNUM ORIENTALE* L.,

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### Summary

To study the antibacterial activity of *Blechnum orientale*L., leaves against human pathogenic bacteria adopting cup methods. The minimum concentration of *B. orientale* L., leaves extract (0.025mg/ ml) showed maximum inhibition of zone against *Proteus vulgaris* and minimum zone of inhibition against *Bacillus subtilis* and *Staphylococcus aureus*.

### Introduction

*Blechnum orientale* L., belongs to the family (Blechnaceae), grows in Manjolai region, South Western Ghats in Kalakkad Mundanthurai Tiger Reserve in South India. The medicinal fern *B. orientale* L., is known to Manjolai local people as thotripanai which is used as indigenous medicine for stomach pain. According to Dixit *et al*, (1) medicinal values of fronds are used as a poultice for boils in Malaya, rhizome is used as an anthelmintic in China and as cure for intestinal wounds. Fronds are also used for urinary bladder complaints in India, Polynesia and as a diaphoretic, aromatic and aperative in Philipines. Kumar *et al*, (2) recently, reported to malayee people edible in in rhizome. Review of this plant's chemical of chlorogenic acid, (3-coumeric acid, caffeic acid, p-hydrobenzoic acid and proto catechuric acid were isolated (3). There is no antibacterial activity reported in this plant.

In this present work, we prompted our reprot to evaluate the antibacterial activities of *Blechnum orientate* leaves against human pathogens.

### Materials and Methods

The medicinal fern *Blechnum orientate* were collected from Manjolai, Kalakkad Mundanthurai Tiger Reserve, forest region, Tirunelveli District, Tamil Nadu.

#### Preparation of extracts

250 g of powdered material was extracted with acetone in Soxhlet apparatus continuously for 3hr at room temperature (4). The extract was concentrated in a vaccum desicator.

### Antibacterial activity

The tested extract of *Blechnum orientate* leaves was dissolved in acetone (0.025mg/ml), and these extract tested for antibacterial activity using the cup plate method as described in Indian Pharmacopoeia (5). The sterile plate of nutrient agar, which had been surface spread with 0.1 ml of logarithmic phase bacteria at a density adjusted to a 0.5 McFarland turbidity standard (10 colony - forming units [CFU]/ml.). The bacterial plates were incubated at 37°C for 48 hrs. The results were then recorded by measuring the zones of growth inhibition surrounding the cylinders. Control has a equal volume of acetone.

**Table -1: Antibacterial activity of *Blechnum orientale* leaves**

S.No	Test organism	Zone of inhibition(mm)*
1	<i>Bacillus subtilis</i>	9.0 ±0.816
2	<i>Klebsiella pneumoniae</i>	16.33 ±0.471
3	<i>Salmonella typhi</i>	16.33 ±0.471
4	<i>Staphylococcus aureus</i>	8.33 ±0.471
5	<i>Streptococcus pyogenes</i>	15.0 ±0.816
6	<i>Proteusvulgaris</i>	22.0± 0.816
7	<i>Pseudomonas sp.</i>	--
8	<i>Serratia sp.</i>	13.0±0.816

\*Mean ± Standard deviation values are triplicates

### Results and Conclusions

The leaf extract of *Blechnum orientale* L., was found to be 1.28% (w/w) green or based on the dry weight, respectively. The phytochemical result of essential oil, phenolic compounds and triterpenoids were present in *B. orientale* L. The result obtained for the antibacterial activity of acetone extract of *Blechnum orientale* L., can be seen in Table-1. Nearly 87.5% of the antibacterial activity was observed. The aximum inhibition of zones against *Proteus vulgaris*, *Klebsiella pneumoniae* and *Salmonella typhi* were observed.

Similar results Parihar *et al.*,(6,7), has reported that the several ferns *Adiantum capillus-veneris*, *A. incisum*, *A. lunulatum*, *Athyrium pectinatum*, *Chelienthes albomarginata*, *Dropteris* sps., *Tectaria macrodonta*, *Marsilia minuta* and *Equisetum incisum* against *Salmonella typhi*. Moderate inhibition of zones was observed in *Bacillus subtilis*, *Serratia* sp., and *Staphylococcus aureus*. Not detectable inhibition of zone against *Pseudomonas* sps. The present study concluded that antibacterial effect may be present in the bioactive constituents of essential oil, phenolic compounds and triterpenoids. This fern is recommended for the treatment of bacterial diseases.

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