

## Antibacterial Activity and Phytochemicals of Sequential Solvent Extracts of *Solanum Trilobatum*

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**Abstract:** *Solanum trilobatum* which is known as Toothuvilai in Tamil has been widely used to treat respiratory disorders, especially bronchial asthma. Therefore this study was designed to test the antibacterial activity and phytochemical property of sequential solvent extracts of leaves of *Solanum trilobatum*. Leaf powder was successively extracted with solvent of dichloromethane (DCM), then by ethylacetate (EA) and finally by ethanol (EtOH). 10 mg/100  $\mu$ L, 30 mg/100  $\mu$ L and 50 mg/100  $\mu$ L doses of the crude extracts were used for this study. The crude extracts were dissolved in the solvent mixture of 30% of acetone and 70% of the mother solvent. The crude extracts were tested for antibacterial activity by *in vitro* agar well diffusion method and screening test was done against five bacterial pathogens. Two of them were Gram positive bacteria *Bacillus subtilis*, *Staphylococcus aureus* and three of them were Gram negative bacteria *Escherichia coli*, *Pseudomonas aeruginosa* and *Klebsiella*. Streptomycin and solvents used to dissolve extracts were used as standard and control respectively. Among the extracts, EA and EtOH were more effective for the *in vitro* control of bacteria. These two extracts had inhibition on all test bacteria at all test concentrations. *S.aureus*, *B.subtilis*, *P.aeruginosa* and *Klebsiella* were highly inhibited by EA extract at 50 mg/100 $\mu$ L but *E.coli* was highly inhibited by EtOH extract at the same concentration. However, at 10 mg/100 $\mu$ L EA extract revealed higher inhibition on all test bacteria compared to EtOH extract, ranged from 11.8 $\pm$ 0.3 mm to 18.8 $\pm$ 0.8 mm. Statistical analysis revealed that there were significant ( $p < 0.05$ ) difference in the inhibitory effect of the extracts with tested bacteria. Among the test bacteria the *Klebsiella* was found to be the most sensitive to EA extract. Time course analysis revealed that there was no considerable change in the inhibitory effect of the test samples until 72h incubation. Standard antibiotic streptomycin failed to inhibit the growth of *P.aeruginosa* and *E.coli* at the test concentration and the diameter of inhibition zone produced by the streptomycin on *S.aureus* was found to be less than that of the EA extract on same bacteria.

**Keywords:** *Solanum trilobatum*, Sequential extraction, Antibacterial activity, Phytochemicals