



Evaluation of Antimicrobial activity of *Spilanthes acmella* flower head extract

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In recent years, there is a great demand for the plant-based products because of broad biological activities, low impact on environment and safety to non-target organisms. Hence, many plant species have been screened and plants with high bioactive compounds have been identified. *Spilanthes acmella* Linn. is one such important medicinal plant with rich source of therapeutic constituents. *S.acmella* (Family-Asteraceae) commonly known as Akarkara or toothache plant is an annual, spreading type with bicoloured, red/gold flower buds. The roots, flower heads and whole aerial part yield a compound known as spilanthal amides, which is a powerful stimulant, sialogogue and local anesthetic [1-3].

In Ayurvedic system of medicine, flower heads and roots are used in treatment of scabies, psoriasis, scurvy, toothache, infections of gums and throat, paralysis of tongue and remedy for stammering in children [4]. In the present study, the antimicrobial properties of *S. acmella* have been investigated.

Flower heads were collected from the garden, IICT, Hyderabad. The air-dried and powdered flower heads were extracted with petroleum

ether (60-80°C) in a Soxhlet apparatus. The extract further concentrated in vacuum rotary evaporator and the residue was weighed. Six test organisms, *Bacillus sphaericus*, *Bacillus subtilis*, *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Klebsiella aerogenes*, *Chromobacterium violaceum* were obtained from the Institute of Microbial Technology, Chandigarh.

Test organisms were maintained on readymade nutrient agar media (Hi-media). Stock solutions were prepared by dissolving the plant extract in DMSO (Dimethyl Sulphoxide) and different concentrations were made (2.0, 1.0, 0.5, 0.025, 0.125, 0.0625, 0.0312, 0.0156 and 0.0078 mg/ml). In order to test the antibacterial activity, MIC test (Minimum Inhibitory Concentration) was performed by broth dilution [5] method.

Cultures were kept in an incubator at 37±1°C and results were observed after 24 h. Three to four replicates were maintained for each treatment. MIC test was conducted to find out the lowest concentration of the plant extract required for complete inhibition of bacteria growth. A very faint growth of bacteria was

generally disregarded, where as a large button of growth was considered that the test compound failed to inhibit growth completely at the concentration employed. In the present study, the MIC of flower head extract was 0.25mg/ml for *Bacillus sphaericus*, *Bacillus subtilis*, *Staphylococcus aureus* and 0.50mg/ml *Pseudomonas aeruginosa*, *Klebsiella aerogenes*, *Chromobacterium violaceum*. The

activity of the plant against both gram-positive and gram-negative bacteria may be indicative of the presence of broad-spectrum antibiotic compounds

This clearly indicate that *S.acmella* has potential microbial properties and can be utilized for large-scale cultivation and purification of active compounds.

References

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