Antibacterial Activity of *Coldenia Procumbens* Linn

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ABSTRACT:

*Coldenia procumbens* Linn is a commonly available weed, which is widely used in the codified Indian systems of medicine namely Ayurveda and Sidha. The variety of medical applications of the plant parts and relative lack of enough literature on the pharmacological activities provoke a preliminary study on its various applications including antibacterial activity.

INTRODUCTION

Despite recent advances in antibacterial chemotherapy, several types of superficial wounds still show resistance to routine wound treatment and are prone to infections. Antibiotics are of little help in such cases because these skin ulcers often contain microorganisms that are drug resistant. Moreover in many cases antibiotics produce adverse side effects and allergy.

*Coldenia procumbens* Linn. (Family Boraginaceae) is a procumbent, deep rooted hairy herb found throughout India as a weed in moist places. It is known as “Tripunkhi” in Hindi and “Seruppadai” in Tamil. It is found commonly in wastelands, agricultural fields and ponds during summer season as a weed.

The leaves of the plant have a variety of medicinal applications. The fresh poultice of leaves is applied to mature abscesses. The powdered roots enter into a compound formulation given in leucorrhoea and menorrhagia. The decoction of root is given in rheumatism and for digestion. Based on the above claim, a preliminary study of the antibacterial activity of the plant was carried out.

MATERIALS & METHODS

Plant Material

The plant material was collected by Prof. B. Jayaraman, Plant Anatomy Research Centre (PARC), Chennai. A herbarium specimen of the plant was also preserved. The collected plant material was washed, dried in shade and crushed to a coarse powder.

Extraction

25 gms of the plant material was extracted with 100ml water using a Soxhlet apparatus for 5 hrs. The resultant solution was filtered and used for the study.

Culture Media and Microorganisms

The medium of choice was Muller-Hinton agar, with a pH of 7.2 to 7.4 manufactured by Himedia Laboratories, Mumbai.

The test bacteria used were Bacillus subtilis.
NCIM 2439, Staphylococcus aureus
NCIM 2079 (both gram+ve) and E.coli
NCIM 2118, Psedomonas aeruginosa
NCIM 2027, Klebsiella pneumoniae
NCIM (Gram-ve).
The standard drug used was ciprofloxacin 100mcg/disc.

PROCEDURE

The Kirby-Baver Antimicrobial Susceptibility test was employed for the determination of the zone of inhibition. Here, the filter paper discs of uniform size were impregnated with specified concentrations of different antibiotics and then placed on the surface of an agar plate that has been seeded with the organism to be tested. The medium was poured in the plates to a uniform depth of 5mm and refrigerated on solidification. Prior to use, the plates were transferred to an incubator at 37°C for 10-20 minutes to dry off the moisture that developed on the agar surface.

The plates were then heavily inoculated with a standardized inoculum by means of a cotton swab to ensure the confluent growth of the organism. The discs were aseptically applied to the surface of the agar at well spaced intervals. They were then examined for the presence of growth inhibition. A measurement of the diameter of the zone of inhibition was made and its size was compared to the standard drug.

RESULTS AND DISCUSSION

The table 1 shows the antibacterial activity of Coldenia procumbens Linn. in comparison with the standard drug ciprofloxacin. Although the activity is less when compared with the standard drug, there is antibacterial activity which can be due to the chemical constituents present in the aqueous extract. These findings support the applicability of the plant in traditional systems of medicine, for its claimed use in fever, piles and scorpion sting. Further work is necessary to isolate and purify them, which will allow its recommendation as an accessible alternative to synthetic antibiotics.

| S.No | ORGANISM                      | ZONE OF INHIBITION |
|------|-------------------------------|--------------------|
|      |                               | STD(m.m) | DRUG (m.m) |
| 1.   | Bacillus subtilis NCIM 2439   | 34       | 22        |
| 2.   | Staphylococcus aureus NCIM 2079 | 30       | 20        |
| 3.   | E-coli NCIM 2118              | 32       | 24        |
| 4    | Pseudomonas aeruginosa NCIM 5029 | 30       | -         |
| 5    | Proteus vulgaris NCIM 2027    | 32       | 20        |
| 6.   | Klebsiella pneumoniae NCIM 2719 | 31       | 19        |
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