

Antibacterial activity of *Aegle marmelos* correa leaves extract

C.C. GAVIMATH¹, Y.L. RAMACHANDRA^{1*}, S. PADMALATHA RAI², H.V. SUDEEP¹, P.S. SUJAN GANAPATHY¹ AND B.T. KAVITHA¹

¹Department of Biotechnology and Bioinformatics, School of Biological Sciences, Kuvempu University, Jnana Sahyadri, SHIMOGA (KARNATAKA) INDIA

²Department of Biotechnology, Manipal Life Science Center, Manipal University, MANIPAL (KARNATAKA) INDIA.

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Many herbal remedies individually or in combination have been recommended in various medical treatises for the cure of different diseases. The therapeutic value of *Aegle marmelos* Correa (Rutaceae) commonly known as 'Bael' has been recognized in different system of traditional medication for the treatment of different diseases and ailments of human beings. The phytochemical and antibacterial studies of the leaf extracts of *A. marmelos* have been investigated. The antibacterial activity was investigated against multi resistant strains of *Staphylococcus aureus*, *Bacillus subtilis*, *Escherichia coli*, *Salmonella typhi*, *Proteus vulgaris*, *Pseudomonas aeruginosa* and *Klebsiella pneumoniae* by disc diffusion method. The results showed that the antibacterial efficacy of petroleum ether extract of leaf was significant and nearer to the standard antibiotic Streptomycin tested. Further the activity was more pronounced in gram-negative strains and moderate in case of gram-positive strains studied. The study results suggest that this plant is promising in the development of phytomedicine for bacterial diseases.

Key words : Antibacterial activity, Bioactive components, Multi resistant strains, *Aegle marmelos*, Disk diffusion method.

INTRODUCTION

Finding healing powers in plants is an ancient idea. Since the advent of antibiotics in the 1950s the use of plant derivatives as antimicrobials has been virtually non-existent. World is endowed with rich wealth of medicinal plants. Plants have always been the principal form of medicine in India and presently they are becoming popular throughout the world, as people strive to stay healthy in the face of chronic stress and pollution and to treat illness with medicines that work in count with the body's own defense (Perumalsamy *et al.*, 1998). Though the recovery is slow, the therapeutic use of medicinal plant is becoming popular because of its inability to cause the side effects and antibiotic resistant microorganisms (Rawat and Uniyal, 2003).

Antimicrobial properties of medicinal plants being increasingly reported from different parts of the world (David and Clark, 1998; Aswal *et al.*, 1996; Ahmad *et al.*, 1998). The traditional treatment approach is of much significance, especially in India due to the endemic presence of infective gastro intestinal diseases which are the major causes of infant and adult mortality (Miranda *et al.*, 1993).

Aegle marmelos Correa belongs to the family Rutaceae. It is commonly called Bilwa or Bael and it is found throughout India. It is a medium to fairly large sized

deciduous and glabrous tree bearing axillary spines and usually trifoliate leaves. Bael leaves are extremely useful for treating diabetes, jaundice, cholera, typhoid, asthma. The leaves are made into a poultice and used in the treatment of ophthalmia or severe inflammation of the eyes or conjunctiva with acute bronchitis and inflammation of the body. The decoction of leaves is useful for intermittent and is an expectorant or promotes the removal of mucous secretions from the bronchial tubes.

Considering the folkloric use of this species to treat infectious diseases stimulated the investigation of the antibacterial activity of the different polar solvent extracts from *A. marmelos* leaves against standard Gram-positive and Gram-negative human pathogenic bacteria including multi resistant strains.

MATERIALS AND METHODS

Collection and processing of plant materials:

The leaves of *A. marmelos* were collected from their natural habitat in the Western Ghats. The plant materials were thoroughly washed with distilled water and then dried under shade for about 10 days. The dried leaves were powdered and stored in air sealed plastic container at room temperature till the time of extraction. The dry leaf powder was subjected for soxhlet extraction using organic solvents *viz.* petroleum ether, Chloroform,

* Author for correspondence.