INTRODUCTION

India has a wealth of medicinal Plants which has been used by our ancestors against various ailments from time immemorial. It is a big repository of medicinal plants that are being utilised in traditional medicine (Chopra et al., 1956). Medicinal plants generally produce many secondary metabolites which constitute an important source of microbicides, pesticides and many pharmaceutical drugs. The effects of plant extracts on bacteria have been studied by various researchers in different parts of the world (Reddy et al., 2001; Gallo et al., 2006, Karthikumar et al., 2007). Mulberry reduces blood serum glucose which was used in the old Chinese herbal medicine (Andallu et al., 2001). It has the ability to reduce blood cholesterol and lipid levels, fight against arterial plaques, diuretic and expectorant. (Andallu and Varadacharyulu, 2003; Doi et al., 2000; Jang et al., 2002). Increasing interest in the health benefits of various plant extracts has led to the investigation of mulberry protein extracts for their antibacterial activity. In the present study protein extract of 3 mulberry varieties viz., Morus indica, V1 and DD were evaluated for antibacterial activity.

MATERIALS AND METHODS

Collection of samples

The mulberry leaves of different varieties such as V1, DD, Morus indica were procured from the garden maintained in the Jnanabharathi campus, Bangalore University, Bangalore for the study. The healthy leaves were washed with distilled water several times, shade dried. About 10g of leaves were blended with prechilled acetone. The slurry obtained was then filtered through whatmann filter paper by adding chilled acetone over the funnel. The extract was air dried and is stored in sealed condition at -40ºC until use.

Extraction of total soluble proteins (TSP)

1g of sample was stirred with extraction buffer containing Tris-EDTA and Thiol compounds and precipitated with 10% TCA. The slurry was centrifuged at 15,000 rpm for 20min at 4ºC. The supernatant was taken and the volume was measured. The TSP was quantified at 280nm and aliquot was kept in the refrigerator.

Extraction of heat stable proteins (HSP)

The TSP was incubated at 70ºC for 10min and then centrifuged at 12,000 rpm for 20min at 4ºC to remove the precipitated heat liable protein. The protein content was determined by Lowry’s method (Lowry et al., 1951).

Bacterial cultures

E.coli, Pseudomonas aeruginosa, Bacillus subtilis and staphylococcus aureus (ATCC type) were procured form Victoria hospital, Bangalore and maintained on nutrient agar medium.

Antibacterial activity assay

The bacteria were grown in Mueller Hinton agar media at 37ºC and maintained at 4ºC. Study of Antibacterial activity was done by cup diffusion method (Perez et al., 1990). The media was sterilised and poured into the sterilized Petri plates. It was allowed to solidify at room temperature. 1000 μL of bacterial suspension was spread on the solidified medium using sterile glass spreader. Wells were bored in the medium

ABSTRACT

Mulberry is a member of the family Moraceae belongs to the genus Morus. The leaves are used to feed silkworms. It is a rich source of proteins. The plant has also been found to possess therapeutic value for many diseases. Protein extracts of selected mulberry varieties viz., Morus indica, V1, and DD was examined against different pathogenic bacteria using cup diffusion method. The heat stable protein extracts of these varieties exhibited varying degrees of inhibitory activity against different bacteria viz., Escherichia coli, Staphylococcus aureus, Pseudomonas aeruginosa, Bacillus subtilis. Among the 3 varieties tested V1 variety showed more significant antibacterial activity against Pseudomonas aeruginosa, Bacillus subtilis and Escherichia coli whereas DD was more effective against Staphylococcus aureus.
three varieties of mulberry have a broad spectrum antibacterial activity against bacterial species tested, it can be explored as a potential natural antibacterial source in pharmaceuticals.

REFERENCES


