RESEARCH PAPER

*Asian Journal of Bio Science* Vol. 6 Issue 1 (April, 2011) : 41-45

# Screening of anti-bacterial activity of C-phycocyanin and its minimum inhibitory concentration (MIC) determination by agar dilution method

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(Received: November, 2010; Accepted : December, 2010)

C-phycocyanin was extracted from laboratory grown *Spirulina platensis*, and the identity was confirmed using standard C-phycocyanin, by HPTLC and SDS-PAGE. It was then partially purified and screened for antibacterial activity. The results were compared with standard C-phycocyanin (Sigma-Aldrich) and standard antibiotics. There were 6 bacterial isolates (Clinical isolates) assayed for antimicrobial activity. The study proved that the C-phycocyanin possessed antibacterial activity which was more potent than standard C-phycocyanin

Key words : C-phycocyanin, Antimicrobial activity, Partial purification, Screening, Minimum inhibitory concentrations

Murugan, T. and Radhamadhavan (2011). Screening of anti-bacterial activity of C-phycocyanin and its minimum inhibitory concentration (MIC) determination by agar dilution method. *Asian J. Bio. Sci.*, **6** (1) : 41-45.

## INTRODUCTION

The blue green algae are the oldest oxygenic photosynthetic organisms. They are classified under the prokaryotic kingdom and are the source of novel bioactive compounds (Patterson *et al.,* 1994). Microalgae has recently received considerable attention, because of it's a source of novel antimicrobial substances, in addition to enzyme inhibiting, immune-stimulant, cytotoxic and anti-plasmodial activities The micro alga *Spirulina platensis*, is used as a source of food since ancient times due to its high nutritional value(Dillon *et al.,*1995). *Spirulina platensis* was also reported to present antimicrobial activity (Demule *et al.,* 1996; Ozdemir *et al.,* 2004) as well as to inhibit the replication of several viruses, such as herpes simplex and HIV-1(Ayehunie *et al.,* 1998; Hernandez-corona *et al.,*2002).

The main objective of the present study was to find out the antibacterial activity of C-phycocyanin obtained from laboratory grown *Spirulina platensis* and to compare the efficacy with standard C-phycocyanin and the available chemotherapeutic agents.

## RESEARCH METHODOLOGY

### Cultivation and maintenance:

The mother culture of *S.platensis* was obtained from Centre for advanced studies, Department of Botany, University of Madras, Chennai, Tamilnadu, India. The culture was maintained in the laboratory on Zarrouk's medium (Modified-1966) in a 1000 ml Erlenmeyer flask. The pH of the medium was 9.2. A white fluorescent lamp served as light source(7000 lux) and an aquarium aerator was used to provide aeration. The sub culturing was performed once in a month.

### Harvesting:

The test culture was grown in an Erlenmeyer flask at optimum condition for a period of 20 days. After incubation the culture was centrifuged at 5000rpm for 10 minutes. The supernatant was discarded and the pellets were washed three times with sterile distilled water and used for phycocyanin extraction.

### Extraction of phycocyanin:

The C- phycocyanin was extracted from fresh biomass as per procedure described by Sarada *et al.* 1999. Fresh biomass was homogenized with 50mM sodium phosphate buffer, the homogenate was subjected to alternate freezing and thawing (3 to 4 cycles) and centrifuged at 5000rpm for 10 minutes. The phycocyanin content was estimated by the method of Sigelman and Kycia (1978).