

## Preliminary Studies on Antimicrobial Activity of Selected Marine Micro Algal Extracts Against Human Pathogens

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### ABSTRACT

Five species of micro algal cultures were collected from Central Marine Fisheries Research Institute, Tuticorin, Tamilnadu. The collected micro algal species, *Isochrysis galbana*, *Dunaliella saline*, *Tetraselmis tetrahele*, *Chlorella salina*, and *Nannochloropsis* sp. were mass cultured in Walne's medium. Ten strains of bacteria, *Enterococcus faecalis*, *Bacillus subtilis*, *Staphylococcus aureus*, *Enterobacter aerogens*, *Streptococcus epidermidis*, *Shigella boydii*, *E.coli*, *Proteus vulgaris*, *Pseudomonas aeruginosat* and *Klebseilla pneumonial*, three strains of fungi *Aspergillus* sp. *Mucor* sp., and *Candida* sp. were used for the antimicrobial study. Among the total 5 micro algal extracts used against the ten bacterial pathogens, only three pathogens *S.aureus*, *E.coli*, *P. aeruginosa* showed inhibition. *Isochrysis galbana* extract showed maximum inhibition when compared to other extract. In the antifungal study, *Aspergillus* sp., *Mucor* sp., and *Candida* sp. showed inhibition. *Isochrysis galbana* extract showed maximum inhibition when compared to other extract. Among the 3 different solvent used ethanol showed maximum extraction of antimicrobials. On the basis of anti microbial activity the ethanol extracts of *I. galbana*, *D. saline* and *T. tetrahele* were selected for preliminary phyto-chemical analysis. It showed the presence of sterols, carbohydrates, proteins, fixed oil and fats. From this study it was clear that the solvent played an important role for extracting the particular antimicrobials from marine plants and the sterols played an important role in the antimicrobial activity of selected algal species.

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Nature has been the traditional source of new pharmaceuticals. Natural products have long been used as foods, fragrances, pigments, insecticides, medicines etc. Due to their easy accessibility, terrestrial plants have served as the major source of medicinally useful products, especially for traditional or folk medicine. About 25% of the pharmaceutical sales are drugs derived from plant natural products and an additional 12% are microbially produced natural products and over 50% of the marketed drugs are either extracted from natural sources or produced synthetically using natural products as templates or starting materials. The spread of drug resistant pathogens is one of the most serious threat to the successful treatment of microbial disease. Resistant, mutant bacterial strain has developed as a consequence of over prescription and inappropriate use of antibiotics in the treatment of various diseases. Their quickly changing patterns of resistance and susceptibility need to be addressed with a constant search for novel drugs. The search for antimicrobial agents has taken a definite direction in developed countries. In recent years, with the need for additional compounds for use in

medicine the marine micro organisms receiving increased attention. The future of the world population depends mainly on the marine environment for its food and other life saving drugs. Hence, utilization of marine resources for developmental purpose has gained considerable attention in recent times. Relatively marine area appears especially promising to discover new bio active compounds against pathogenic organisms that are becoming resistant to the useful antibiotics. Many biologists feel that marine micro organisms may provide unique bioactive compounds including marine toxins, which do not occur in terrestrial micro organisms. Marine organisms are a rich source of structurally novel and biologically active metabolites. Primary or secondary metabolites produced by these organisms may be potential bio active compounds of interest in the pharmaceutical industry. Search for new metabolites from marine organisms has resulted in the isolation of more than 10000 metabolites, many of which are endowed with pharmacodynamic properties.

Marine planktonic algae have been recognized as potential source of antibacterial

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