RESEARCH ARTICLE | *International Journal of Plant Sciences,* (January to June, 2010) Vol. 5 Issue 1 : 209-210

Antifungal activity of algal extracts on *Macrophomina phaseolina* Tassi (Goid)

V.S. PATIL AND S.D. PINGLE

Accepted : November, 2009

SUMMARY

India is an agricultural country and its most of the economy is based on the agricultural products. Therefore, for increasing agricultural production it is need to develop biological disease control measures alternative to chemicals with using high yielding varieties because increase in the cost of chemical agents and their harmful effects on environment and health has drawn world's attention towards the use of biological agents. *Macrophomina phaseolina* Tassi (Goid) is an important phytopathogen causing root rot of many crop plants and which ultimately decreases the yield. The rich heritage of flora of plant kingdom is the most efficient source of bioactive compounds. Several workers reported biocidal properties associated with extracts of various organs of many higher plant species. But in case of lower plants algae has been very little studied. Effect of three algal species of *Chara zeylanica, Enteromorpha intermedia* and *Cladophora crispata* extracts were tested in *in vitro* by food poisoned technique to find out there inhibitory effect on the growth of *Macrophomina phaseolina* Tassi (Goid). Extracts of *Cladophora crispata, Enteromorpha intermedia* and *Chara zeylanica* were found superior in inhibiting the mycelial growth 56.61%, 50.14% and 39.71%, respectively.

Key words : Antifungal, *Macrophomina phaseolina* Tassi (Goid), Algal extracts

India is an agricultural country and it's most of the economy is based on the agricultural products. Algae are an applied term used to all primitive, auto-tropic, thalloid plants and are most commonly occurring in water *viz*. fresh, marine or brackish water. Human being uses algae since historical period as food, fodder, fertilizers etc. While fungi are an important group of micro- organism, which is responsible for various plant diseases. A number of commercial chemical fungicides ultimately cause various problems like pollution and health due to its toxicity. Therefore, the need to develop disease control measures alternative to chemicals has become priority. The presence of bioactive compounds in some higher plants has long been recognized as an important factor for disease resistance. Bioactive compounds are biological in origin with desired physiological activity when tested on an organism. Such compounds are biodegradable and considered as valuable for controlling plant diseases. Numbers of workers both from India and abroad have done investigations on the various aspects of antimicrobial activities of marine algae (Kumar and Rengasamy, 2000, Liao *et al*., 2003, Hellio *et al.,* 2004; Kumar *et al*., 2005). There is paucity of information on fresh water algae with respect to biocidal property. In this context, the present work was undertaken to assess the antifungal activity of three fresh water algae collected from different fresh water bodies of Ahmednagar district for their potentials as biocides against phytopathogen *Macrophomina phaseolina* Tassi (Goid) which is an important phytopathogen causing root rot of many crop plants.

Correspondence to:
V.S. PATIL, Department of Botany, A.S.C. College, Rahata,Tal. Rahata, ALUNEDNAGAR (M.S.) INDIA
Authors' affiliations:
S.D. PINGLE, K.J.S. College, KOPARGAON (M.S.) INDIA

MATERIALS AND METHODS

In order to study the antifungal activity of algal extracts *Chara, Enteromorpha* and *Cladophora* were collected from different fresh water bodies of Ahmednagar district in large quantity. Collected algal material was washed with water and brought to the laboratory in polythene bags. In laboratory algal material were again washed with tap water to remove debris, epiphytes, sand particles etc. These collected and washed material was shade dried and completely dried material was ground in a grinder to obtain fine powder for the preparation of algal extracts.

Algal extracts were prepared by the method described by Shivpuri *et al*. (1988). 10gms fine powder of each alga crushed into fine paste using 50ml of alcohol as solvent. The homogenized mixture was filtered through double layer muslin cloth. The filtrate was kept in oven at 40^0C for the evaporation of alcohol. After evaporation remaining algal extract powder was dissolved in 100ml distilled water. These extracts were autoclaved at 15lb pressure for 20 minutes. For the testing antifungal activity Food Poison Technique (Nene and Thapliyal, 1979) was used. Autoclaved extracts was individually added into previously sterilized PDA medium (5ml algal extract +