

Allelochemicals from the leaves of *Tamarindus indica* L.

Suparna Mandal Biswas¹, Nasrin Begam¹, Sunanda Chanda¹ and
Lalit Kumar²

¹*Agricultural and Ecological Research Unit, Indian Statistical Institute, 203,
B.T. Road, Calcutta 700 108, India*

²*Indian Institute of Pulses Research (I.I.P.R.), Division of Crop Science, Kalyanpur,
Kanpur 208024, India*

ABSTRACT

Potent biopesticides with strong antimicrobial activity as well growth inhibitory activity has been isolated and purified from the Ethyl Acetate Fraction (TrEAF) of tamarind leaves. Chromatographic analyses (TLC, UV, MS, NMR, and IR) indicated the presence of putative caffeic acid derivative in Tamarind leaves. *Aspergillus tamarii* was highly sensitive to TrEAF compound at all concentrations (500 ppm, 1000 ppm, 1500 ppm and 2000 ppm) than *Aspergillus fumigatus*, *Aspergillus niger*. In *Aspergillus tamarii* and *Aspergillus niger*, 1500ppm concentration was very much sensitive to TrEAF compound. *Cercina lutia*, *Staphylococcus aureus*, *Micrococcus roseus* and *Pseudomonas* sp were much more sensitive to TrEAF compound than *Escherichia coli*. No effect of TrEAF compound was detected in *E.coli* at concentration of 1000ppm. When isolated and purified by fractionation and column chromatography, this active TrEAF compound showed concentration-dependent inhibitory/stimulatory activity on rice seeds. At concentration of 1000ppm, it showed 53.81% inhibition on shoot length and 58.85% inhibition in root length. At 500ppm concentration, 29.01% inhibition in shoot length and 38.82% inhibition in root length have been detected. Very slight stimulation on shoot length was observed at 7.81ppm. It showed no effect on the germination of rice seed.

Keywords: *Tamarindus indica* L., allelochemicals, caffeic acid derivative, agrochemicals, antimicrobial activity

Correspondence: S. M. Biswas *Address:* Agricultural and Ecological Research Unit, Indian Statistical Institute, 203, B.T. Road, Calcutta 700 108, INDIA. *E-mail:*mondalsupa@gmail.com or suparna@isical.ac.in. *Tel No.:* (+91) (033) 2575 3225 *Fax:* (+91)(033)2577 3049