

Role of Plant Biomarkers & Quenchers in response to Heavy Metal Stress (Arsenic)

Tirtha Tarafdar, D. Rathnaprabha*

Department of Biotechnology, National Institute of Technology, Warangal, Telangana, India.

*Corresponding author

ABSTRACT

Arsenic, long identified as a Type 1 Carcinogen, poses grimful health hazards to our Food Chain. Millions of people in India are prone to Arsenic Contaminated Ground Water, with toxic levels greater than the demarcated guideline value of acceptability, as set by World Health Organization i.e.; 10 μ M. However, the sequestration of Arsenic from Soil, through mechanically engineered devices, technology is subject to further vivid research and limitless expenditure. Phytoremediation of Arsenate, Arsenite ions through harvestable plant parts of Hyperaccumulator and Hypoaccumulator plant species shows a bay. This review work presents the role of a list of Plant Biomarkers, ROS Scavengers and Stress Quenchers that these plant species deploy for Heavy Metal Detoxification, upto a limited threshold. Apart from widely discussed ones including Chlorophyll, Polyphenols, Prolines, the roles of various enzymes, including internal chelators, such as Phytochelatin, Metallothionein etc., are vehement to understand, for commercial exploitation of these enzyme synthase genes, in synthesizing Heavy Metal (Arsenic, Cadmium, Lead) tolerant Transgenics, in near future.

Keywords: Hyperaccumulator, Hypoaccumulator, ROS Scavengers, Phytochelatin, Metallothionein

