**Abstract**

Zinc plays a pivotal role in physiological and biochemical functions of the plants. Both quantitative and qualitative yield of the plants are strongly dependent on this micronutrient. Supplementation of zinc in the form of synthetic fertilizer is proved to be inappropriate due to its unavailability to plants. This crisis can be prevented by the identification of rhizospheric micro-organisms which has the potential to transform various unavailable forms of the metal to available forms. In the present study about thirty five zinc solubilizing bacteria were isolated from eight different agricultural fields (banana, chilli, field bean, ground nut, maize, sugarcane, sorghum and tomato) in and around Coimbatore district of Tamil Nadu. Five isolates were selected as best strains based on their solubilization efficacy in the qualitative estimation. The selected five isolates were identified using 16S rRNA as Stenotrophomonas maltophilia (ZSB-1), Mycobacterium brisbanense (ZSB-10), Enterobacter aerogenes (ZSB-13), Pseudomonas aeruginosa (ZSB- 22) and Xanthomonas retroflexus (ZSB-23). These strains were subjected to further studies such as quantitative estimation, influence of the isolates on the pH of the medium and production of gluconic acid as well as IAA. Of the five bacterial isolates, *Pseudomonas aeruginosa* showed maximum solubilization of zinc in the broth and also maximum decrease in the pH from 7 to 3.3 and recorded highest IAA production. HPLC analysis of gluconic acid production by the selected isolates indicated their potential to solubilize zinc.