ABSTRACT

In the present study, twenty five soil samples were collected from atrazine exposed agricultural corn fields of Kasur and Okara, Punjab Pakistan for isolation of atrazine degrading microorganisms. Screening of these samples resulted in the isolation of 10 bacterial and 11 fungal atrazine degrading strains. Out of these, five best degrading strains each for bacteria (S-1, S-2, S-4, S-7 and S-9) and fungi (S-1, S-2, S-6, S-10 and S-11) on the basis of atrazine lysis zones were subjected to secondary screening. Among these, bacterial strain S-4 (74%) and fungal strain S-6 (79%) showed maximum atrazine degradation index. The best bacterial and fungal atrazine degrading strains were identified as *Enterobacteria* sp. and *Rhizopus* sp., respectively. Different reaction conditions (media, incubation time, temperature, pH, carbon source, nitrogen source and atrazine concentration) were optimized for enhancing the atrazine degradation potential of selected strains. *Enterobacteria* sp. (S-4) exhibited maximum atrazine degradation in a culture medium BM2 having pH 6 with 0.3% (w/v) sucrose and 0.1% (w/v) atrazine after 144 h of incubation at 35 °C. *Rhizopus* sp. (S-6) exhibited maximum atrazine degradation using a culture medium FM3 having pH 7 with 3% (w/v) sucrose and 0.1% (w/v) atrazine after 168 h of incubation at 30 °C. *Rhizopus* sp. (S-6) was found more efficient in biodegradation of atrazine as compared to *Enterobacteria* sp. (S-4). These results suggest the use of these strains for the treatment of highly atrazine exposed agricultural fields.