1.Abstract

Aromatic amines are well known for their properties as potential mutagens as well as carcinogens. Aniline is an aromatic amine and it is used as an intermediate of many synthetic organic compounds. In the present study, from 30 samples of sewage and agricultural waste water, 5 aniline degrading isolates were recovered. The five isolates were identified according to morphological characters, Gram staining, biochemical tests and 16S rRNA gene sequence analysis as *Achromobacter spp.* (2 isolates), *Pseudomonas spp.* (2 isolates) and *Enterobacter spp.* (1 isolate). Aniline was used in concentration of 100 mg/L at 30°C under shaking conditions of 150 RPM at pH 7 as a sole carbon source for the growth of the five isolates. Biodegradation of aniline was measured by high performance liquid chromatography (HPLC). Within 10 days, aniline degradation percentage of isolates was variable ranging from 27% to 61% of the starting dose of aniline with formation of catechol as byproduct which was further biodegraded to cis, cis muconic acid (CCMA) confirming that the isolate was following the ortho-cleavage pathway. Additionally, the ability of this isolate to degrade aniline was confirmed by measuring the optical density (OD) of the growth of the five isolates in presence of aniline as sole carbon source using the microtiter plate method at 620 nm. The genomic DNA and plasmid of the isolate were then extracted. Screening for selected genes, known to encode aniline depredating enzymes; *cat1,2, cat2,3*, *tadR* and *tdnQ* using polymerase chain reaction with specific primers was done. It revealed the presence of *cat1,2, tadR and tdnQ* in the plasmid preparation. It was concluded that aniline is degraded by the five isolates through a pathway involving enzymes performing ortho-cleavage of the benzene ring. Additionally, these five isolates used aniline as sole carbon and energy source in a time dependent manner. Also these isolates could have potential role for use in bioremediation of aniline contaminated environments.