ABSTRACT

The present research work is concerned with biotransformation of L-phenylalanine to a stable L-dopaquinone by using pre-grown mycelia of *Aspergillus oryzae*. Different strains of *A. oryzae* were isolated and collected from various soil samples. Out of 32 isolated strains, isolate 19 and 27 showed higher L-dopaquinone production and dopa oxidase activity. Therefore, isolate 19 and 27 was selected. Biomass harvesting was accomplished in a medium containing chloramphenicol as antibiotic. The mycelia was filtered, washed with cold water and stored at 4°C. L-Dopaquinone and dopa oxidase assays were performed, and measured the absorbance at a wavelength of 475 and 505 nm, respectively. Different cultural conditions such as, time of incubation (48 h), medium pH (6) and temperature (30°C) were optimized after the results of assays. Other parameters like nitrogen requirements, inoculum size (1.5% v/v), biomass level (2 mg/ml), L-tyrosine (3.75 mg/ml) and L-ascorbic acid (8.75 mg/ml) concentrations were evaluated by reaction procedure. Certain stabilizers including rochelle salt (20 µM), glycerol (25 µM), ortho-phosphoric acid (15 µM) and ethanol (20 µM) can also increase production of L-dopaquinone by increasing dopa oxidase activity. Hence, from the result of present study it was observed that production of L-dopaquinone and activitity of dopa oxidase could be increased in the reaction mixture by the addition of various substances. They increased the production of L-dopaquinone by 21.52 and 29.75 µg/ml times while, their corresponding dopa oxidase activities enhanced up to 12.13 and 16.93 U/ml times for isolate 19 and 27, respectively. In future, stable L-dopaquinome will provide clinical applications.