Abstract

Endophytic fungi is a promising alternative way of taxol production. This research work was conducted by using samples of *Taxus baccata* for extraction of taxol, which is an effective anti-cancer drug. Ten samples of *Taxus baccata* were collected from Northern Pakistan. From these samples, 20 different fungal strains were isolated, among them 10 were taxol producing. Maximum production of taxol was observed by IIB-E2 strain (40.5 µg/l). Identification of this strain was done by morphological and genomic analysis. The isolated fungal strain was *Aspergillus fumigatus*. Five different medias were used for optimization from which M5 media produced the highest quantity of taxol 110.10 µg/l. Incubation period showed that 113.2 µg/l of taxol was produced at 15th day of fermentation. However, incubation temperature showed that 115.5 µg/l of taxol was produced at 30°C. Moreover, initial pH of 6.5 showed 118.5 µg/l of the taxol. Carbon sources showed that glucose produced 154.12 µg/l of the taxol and nitrogen sources showed that 163.8 µg/l of the taxol was produced by addition of yeast extract. Production of 166.7 µg/l of taxol was observed when the inoculum size was 6%. This research work revealed that rather than destroying ecosystem by cutting down *Taxus* trees, endophytic fungi is sustainable alternative way for the scalable production of taxol.