J Bioproces Biotechniq 2014, 4:6
http://dx.doi.org/10.4172/2155-9821.C1.007

OMICS International
conferenceseries.com

3rd International conference on
Bioprocess and Biosystems Engineering
September 14-15, 2015 Baltimore, USA

Enhanced production of taxol from endophytic fungal isolate using surface culture fermentation

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This study was aimed at the isolation of the highly productive fungal strain for the production of an anti-cancer drug taxol. About 140 samples belonging to ten plant species were collected from different localities of Lahore, Nathia Gali and Shringal (Dir). About 300 fungal strains were isolated and screened for the production of the taxol using surface culture fermentation. Fifteen isolate were found to have the ability to produce the taxol. The maximum amount of the taxol, i.e., 745 µg/L of the culture broth was produced by the strain IIB 275. The said strain was identified as *Eurotium rubrum* on the basis of morphological features and DNA sequence analysis. Ten different fermentation media were optimized and M3 was found to be the best with maximum yield of the taxol (2.58 mg/L). The incubation temperature and period was also optimized and it was found that the fungal strain had maximum productivity at temperature 30°C (2.59 mg/L) and incubation period of 21 days (3 mg/L). The fermentation medium with initial pH of 6.5 was found to have the maximum productivity of the taxol. Among the nutritional parameters, glucose with concentration of 4% was found to be the best carbon source while peptone and sodium nitrate was found as best organic and inorganic nitrogen sources, respectively. A 5% spore inoculum was found to have the maximum productivity of the taxol (8.50 mg/L) at optimized fermentation conditions.

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Authentication and characterization of animal cell lines: Towards best practices in cell culture

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Animal cell lines are important *in vitro* systems and tools for scientists in diverse disciplines such as basic cell biology, genetic mapping, gene expression and gene therapy. Cell line authentication and characterization are crucial in these activities. Yet, they are underappreciated by most research scientists. Over the years, numerous cell lines have been shown to be misidentified due, in part, to poor techniques and inadequate authentication protocols. Technological advances have given rise to improved capabilities. Cell line authentication and characterization now require a comprehensive strategy that employs several complementary technologies for systematic testing for morphology, microbial contaminations, cellular cross-contamination as well as functionality. The validity of conclusions drawn from research data is dependent on consistent and unequivocal verification of cell line identity and function. It is estimated that the financial loss incurred by poorly characterized or misidentified cell lines is in the millions of dollars. An overview of the current technologies used to authenticate and characterize animal cell lines will be presented.

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