

عنوان مقاله:

Optimization of biosurfactant production by an oil-degrading Bacillus isolated from petroleum-contaminated soil

محل انتشار:

بیستمین کنگره بین المللی میکروب شناسی ایران (سال: 1398)

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خلاصه مقاله:

Introduction and Objectives: Chemical surfactants are used in various industries. they are toxic and low degradability. biosurfactants are potentially used in many commercial applications. because of their low toxicity, environmental compatibility can be a good alternative to surfactants, but due to the high cost of production and low production rates, they can not compete with chemical surfactants in commercial use. Therefore, finding new bacteria with a higher production rate in a shorter time, optimizing fermentation conditions to increase production and reducing final costs is very important. The main objective of this study is to evaluate the effect of some physical and chemical conditions on the duration and amount of biosurfactant production in the in-vitro condition. **Materials and Methods:** Two-level fractional factorial design was employed to identify the most important chemical composition and physical factors affecting on biosurfactant production. The investigated factors were divided into two categories Physical factors included: temperature and chemical factors including: glucose (%), glycerol (v/v %), olive oil(v/v %) as a carbon source, yeast extract (g/l), peptone(g/l), NaNO₃ (g/l) as a source of nitrogen and ILCO percentage (v/v %). According to the fractional factorial design, nineteen experiments were performed regarding one replicate and three center points. Then the results were analyzed with the Design Expert 7.0.0 package. **Results:** The highest amount of biosurfactant production was observed at temperature 25 c° , glucose (1.25 %), glycerol (3.3% v/v), olive oil (1.6 %v/v) , yeast extract (1.2 g/l), peptone(2 g/l), NaNO₃ (0.6 g/l) and ILCO percentage (0.5%v/v) And the production time decreased from 10 days to 32 hours. **Conclusion:** The result of this study indicated the optimization of the conditions of cultivation on the production and duration of the production has a significant effect. Therefore, this study .is very important in research on biosurfactants

کلمات کلیدی:

Biosurfactant, Biodegradation bacteria, Optimization, Experimental design

