



Isolation and purification of biosurfactant producing bacteria and their application in composting

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Composting is a process of biodegradation of organic matters due to the activity of microorganisms. Compost fertilizes the soil by providing nutritive elements and improving the soil structure. Traditional techniques including the control of C/N, humidity, oxygen, temperature and porosity in the composting system were used to improve conditions of the microenvironment for enhancing the degrading efficiency. Nowadays regarding to widespread application of biosurfactant in bioremediation and biodegradation, it is possible to take their advantages in order to improve the quality of the compost. Biosurfactants, produced as metabolic by-products by bacteria, yeasts and fungi, are of special advantages over chemically synthesized surfactants owing to: Their biodegradability, low toxicity, solubilization of low solubility compounds, insensitivity to extreme temperature and pH. They decline the surface tension between liquid and solid during composting, increase the translation of organic matter and restrain the emission of malodor gases. They also bio-catalyze remediation of recalcitrant organics and heavy metals, improve the microenvironment of compost, eliminate phytopathogens and accelerate the process of composting. Therefore, inoculation of biosurfactant producing bacteria to the compost is one of the aims of this study. In this study, 80 strains from microbial flora of different kinds of compost were isolated and their ability to produce biosurfactant was assessed by four methods: Drop collapse, Oil spreading, Emulsification test (E24) and haemolysis test.

Keywords: biosurfactant, Compost, surface tension

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