

Fruits and Vegetables Peels as the Sole Source of Nutrients for the Production of Amylases by Haloalkaliphilic Actinobacteria

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Abstract

Kitchen waste materials are the significant sources of starch, sugars, nitrogen contents and minerals which can be highly valuable for the growth of the microorganisms and production of enzymes and other molecules. Potato, banana, corn and sweet potato are frequently used in our diet, and their peel waste can be effective growth nutrient for the production of enzymes by the microorganisms. In this study, we used variety of peels from fruits and vegetables as nutrients to grow the actinobacteria for the production of amylases. Actinobacteria were isolated from sea water of Kachhighadi Coast near Dwarika, Gujarat. Number of Actinobacterial strains of Nocardiosis genera were screened and selected for the amylase production. The amylase production was initially assessed on the solid media supplemented with different fruits and vegetable peels as substrate. Peels and other waste generated from different fruits and vegetables were used for amylase production at appropriate conditions of salt, inoculum size, alkaline pH and temperatures. The growth of the organisms and amylase production was periodically monitored. The strains Kh-2(13), Kh-2(1) and Kh-3(12) produced maximum amylase with potato peel as substrate after 48 hrs of growth. However, other strains also produced amylases at the significant level utilizing various raw substrates of fruits and vegetables. Based on its relative suitability and starch contents, the potato peels were selected for further studies for the amylase production. The optimum amylase production by the selected actinobacteria was observed in stationary phase after 4 days of growth. The study projects significance of the waste raw materials for the production of enzymes in extremophilic microorganisms.

Keywords: Haloalkaliphilic Actinomycetes, Amylase production, Kitchen waste, Raw material

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