

Naringinase Producing Bacterium from Decaying Bitter Citrus Fruit (*Citrus medica*)

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Naringin is a major component found in all parts of citrus family trees and is responsible for the bitter taste of their juices. Microorganisms that are associated with citrus family fruits appear to have the ability to produce extracellular naringinase enzymes which can degrade the naringin thereby reducing its bitterness. This study was aimed to isolate the naringinase producing bacteria from bitter citrus fruit (*Citrus medica*) to debitter its juice and to identify the best naringinase producing bacterium. Initially the naringinase producing strains were isolated from decayed bitter citrus fruit and the soil where fruit is allowed to decay, using selective medium which was naringin agar medium. Totally, seven strains were selected from the medium and out of which four strains (BIC2, BIC3, BIC5 & BIC7) showed positive responses to qualitative naringinase assay and they were selected for further studies. These selected bacterial strains were subjected to liquid fermentation medium for 60 hours at 37°C at 120 rpm and the produced crude enzyme was tested for naringinase enzyme activity at pH 5 and 50 °C for 10 minutes. Out of the four selected strains, the strain BIC3 showed the best naringinase activity (1.225µmol/ml/min). Since the solid state fermentation system provided natural habitat for bacteria, the naringinase activity was optimized via solid state fermentation system using paddy husk as the support at 37°C and pH 7 for 60 h. Based on the morphological, microscopical and biochemical tests, the selected strain BIC3 was identified as *Enterococcus* sp and the highest activity (302.54Ug⁻¹Dry Matter) was obtained after 48th hours of fermentation at 37°C and at pH 7. Therefore *Enterococcus* sp. could be used to produce large scale naringinase enzyme under solid state fermentation system using paddy husk as support, after the optimization of the culture conditions.

Keywords: Bitter citrus fruit, *Enterococcus* sp, Naringinase, Paddy husk, Solid state fermentation