Acid citric production using fruit and vegetable waste by Aspergillus niger PTCC5510

Matin Rangrazian*,

Abstract Introduction: Citric acid is one of the most widely used fermentation products in the world. Numerous efforts have been made in order to reduce its production costs. Citric acid is one of the most important organic acids and its demand is increasing due to its high consumption worldwide. Also it commonly used because of high utilization in various industries. Purpose: The aim of this study is citric acid production fruit wastes using Aspergillus niger and process optimization. Material and Methods: Aspergillus niger PTCC5510 was obtained Persian Type Culture Collection (PTCC). The taguchi design methodology was adopted to acquire the best process conditions. Four differents factors each one in four levels including pH (4, 5, 6 and 7), substrate types (Orange peels, Melon Peels, Apple peels and broad bean peels), carbon source types (glucose, lactose, sucrose and suger free) and nitrogen source types (amunium nitrate, yeast extract, peptone and free of nitrogen) on citric acid production were assayed. Results: Estimated optimum composition for citric acid production was as follows: Orange peel, pH: 7, sucrose and pepton as carbon and nitrogen source respectively. Conclusion: The results demonstrated the acceptable citric acid production by SSF orange peel using native Aspergillus niger.

Keywords : Citric Acid, Fruit Wastes, Aspergillus niger

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