Citric acid production by aspergillus niger ETGP12, ETGP18 on solid state: Fermentation and effect of initial temperature on yield

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Abstract

Citric acid is mainly produced by solid state fermentation by the filamentous fungus Aspergillus niger. Production of citric acid depends strongly on an appropriate strain and on operational conditions such as aeration, type and concentration of carbon source, nitrogen and phosphate limitation, pH, temperature, concentration of trace elements and morphology of the producer organism. The yield of citric acid increased with the increase in the initial temperature of the fermentation upto 30 oC by A. niger ATCC 9142, thereafter a gradual decrease in the citric acid yield was noticed for all the days of fermentation on both the substrates. The highest yield of citric acid (90.23 g/kg and 96.38 g/kg from sesamum oil cake and rice chaff respectively) was observed at 30 oC at 72 hrs, whereas the lowest yield (50.23 g/kg and 53.61 g/kg from sesamum oil cake and rice chaff respectively) of citric acid was observed at 40 oC at 72hrs. It infers that the increase in the temperature increases the yield of citric acid to certain level and at higher temperatures the yield of the citric acid will be less.

Keywords- Citric Acid, Fermentation, Nitrogen, Phosphate

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