

CITRIC ACID PRODUCTION IN LIQUID SURFACE CULTURE BY RECYCLING *ASPERGILLUS NIGER* CM₁

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Cell recycling has advantages over batch process because in the former the biomass is conserved and thus the fermentation time is reduced. In this study *Aspergillus niger* CM₁ was cultivated at room temperature in a medium containing (gl⁻¹) NH₄NO₃, 0.75; KH₂PO₄, 0.5; MgSO₄.7H₂O, 0.1; peptone, 14; ZnSO₄.7H₂O, 0.1 x 10⁻³; ferrous ammonium sulphate, 0.1 x 10⁻³ and CuSO₄.5H₂O, 0.06 x 10⁻³ and (ml⁻¹) methanol, 30 and gingili oil, 2 at pH 5.2 in a conical flask by inoculating with mycelium (65 h old). Citric acid produced in the medium reached the peak (58.2gl⁻¹) at 8th day and the reducing sugar level decreased to 4.0 gl⁻¹. The spent medium was replaced with fresh medium and the cultivation was continued. In the second cycle maximum citric acid (28.2 gl⁻¹) was produced on the 5th day. Likewise the recycling of the biomass was continued for two more batches. Maximum citric acid produced in the 3rd and 4th cycle were 9 (2nd day) and 6.0 gl⁻¹ respectively. The citric acid produced in the 3rd and 4th cycles were 17 and 11% respectively of that produced in the 1st batch. Thus recycling of the biomass had decreased the time required for maximum citric acid production from 8 to 2 days while decreasing the citric acid productivity from 7.3 to 3.0 gl⁻¹d⁻¹.

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