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Screening for novel clot busters from food and environmental samples

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Clot busting is the breakdown or lysis of blood clots by pharmacological means and is colloquially referred to as thrombolysis. Thrombolysis suggests the use of thrombolytic agents, which can be derived from certain microorganisms. Here we are using Staphylococcus spp. to produce Staphylokinase (SAK), which is used to activate plasminogen. It functions by stimulating fibrinolysis by activating plasminogen to form plasmin through the infusion of analogs of tissue plasminogen activator (tpa) and can break up clots which may block the blood flow to the heart muscle. Staphylokinase (SAK) is a bacterial kinase produced by certain strains of Staphylococcus spp. It is a 15.5 kDa, consisting of 136 amino acid single chain protein, which activates plasminogen to form plasmin and digest fibrin clots. The present research work was carried out to screen the staphylokinase producing Staphylococcus spp. from different environmental and food samples collected (milk, water and sewage) in and around Vellore district, Tamil Nadu, India. Out of 12 isolates, 4 organisms were producing staphylokinase effectively.

Keywords: Staphylokinase, Staphylococcus spp., thrombosis, fibrinolytic.

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Optimization of process parameter for bioconversion of p-hydroxybenzonitrile to *p*-hydroxybenzoic acid using nitrilase activity of Gordonia terrae

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P-Hydroxybenzoic acid finds its applications incosmetics, food, pharmaceutical and polymer industries.In the present study optimization of process parameters for bench scale synthesis of *p*-hydroxybenzoic acid from *p*-hydroxybenzonitrile using resting cells of Gordonia terrae having nitrilase activity has been done. The production of *p*-hydroxybenzoic acid was carried out at 35°C in a fed batch reaction at a 500ml scale using BIOFLO C-32 Fermenter (New Brunswick Scientific, USA). The reaction contained 0.1 M of potassium phosphate buffer (pH 8.0) and 3g dcmof resting cells of G. terrae. Six feeding of *p*-hydroxybenzonitrile at an interval of 1h were made. First feeding comprised of 40 mM substrate, second 37.5mM and subsequent feedings were lessened by 2.5 mM from earlier. The reaction mixture was centrifuged at 5,000 g for 10 min to separate the cells and the supernatant was dried at 80°C. Buffer component were separated by solubilizing the dried product in ethanol. *p*-Hydroxybenzoic acid recovered was weighed and analyzed by HPLC. A total 14.4 g of *p*-hydroxybenzoic acid with 98.7%purity was obtained in 6 h with a productivity of0.78 g $h^{-1}g^{-1}$ dcm of G. terrae.

Biography

Vijay Kumar is working as a Ph. D Research Scholar in Department of Biotechnology, Himachal Pradesh University, Shimla under the supervision of Prof. TC Bhalla. He has done M.Sc in Biotechnology and UGC (NET) JRF. He is working on biotransformation with nitrilase enzyme. He has attended various workshops and published abstracts in national and international conferences.

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