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Research article

Immobilization of whole resting cell of *Bacillus* sp. APB-6 exhibiting amidotransferase activity on sodium alginate beads and its comparative study with whole resting cells

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Key words: Amidotransferase, Butryamide, Butyrohydroxamic acid, Alginate, Immobilization.

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Abstract

Amidotransferase have considerable industrial interest due to potential applications in the production of useful hydroxamic acids. Hydroxamic acids (α-aminohydroxamic acid, acetohydroxamic acid, butyrohydroxamic acid etc.) have been investigated as anti-human immunodeficiency virus agents, antimalarial agents and have also been recommended for treatment of ureaplasma infections and anaemia. Amidotransferase from *Bacillus* sp. APB-6 is capable of butyramide conversion to butyrohydroxamic acid. Whole resting cells containing active amidotransferase enzyme were prepared and immobilized in the gel beads of sodium alginate, agar, polyacrylamide, Carrageenen and hydrogel. The beads were tested for amidotransferase using Iron (III) chloride reagents at 55°C and were found to be affected by substrate concentration, type of buffer, buffer pH, buffer molarity, bead size, time of incubation, solvents, metal ions and reaction temperature. These factors were optimized using sodium alginate immobilized beads. These immobilized beads were used repeatedly as biocatalysts in 10 reactions to test their reusability potential and cells retain 85.45 percent relative activity upto 7th cycle. The alginate entrapped cells were tested for the thermal in comparison to free cells and alginate immobilized cells were found more thermostable. This study proved useful in understanding the technique of immobilization of amidotransferase enzyme, its operational stability and its importance in the synthesis of butyrohydroxamic acid.

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