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UREA HYDROLYSIS USING IMMOBILIZED UREASE

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This thesis is dedicated to :

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ABSTRACT

An inexpensive carrier matrix, vermiculite was used for immobilizing urease. A cost effective and simple method of coupling was developed using vermiculite. Immobilization of urease on Amberlite MB-1and Nylon-6 tube were also studied. Activities of free and immobilized urease were studied and compared. Among all methods used for immobilization of urease, the method of coupling the enzyme to vermiculite gave the highest retained activity of 82% (Method 1) and 89% (Method 2) at pH 6.0 and 5.5 respectively. Urease immobilized by Method 1 retained 69% and 30% of its original activity and Method 2 (using glutaraldehyde as coupling agent) retained 81% and 45% of its original activity after 60 days when stored in phosphate buffer at 4^0C and 25^0C respectively. Urease immobilized by these methods retained 68% and 57% of its original activity respectively after 5 repeated use. Urease was also immobilized on nylon-6 using glutaraldehyde as coupling agent. Urease immobilized by this method retained 76% and 51.7% after 60 days when stored at 4^0C and 25^0C respectively. It retained 78% of its original activity after 5 repeated use.The immobilized urease obtained by coupling urease to Amberlite MB-1using glutaraldehyde had a retained activity of 59% at pH 6.0. Urease immobilized by this method retained 62% and 25.3% of its original activity after 60 days when stored at 4^0C and 25^0C respectively. It retained 68% of its original activity after 5 repeated operations.

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