IMPROVEMENT OF THE THERMAL STABILITY OF IMMOBILIZED ALPHA AMYLASE BY COUPLING WITH PROLINE

Vasanthy Arasaratnam and K. Balasubramaniam
(Department of Biochemeistry, Faculty of Medicine, University of Jaffna.)

α- Amylase was immobilized to Sepharose-4B activated by electrophilic method using cyanogen bromide. The α-amylase coupled was 77% of the total protein added. Further L-proline was covalently linked to the immobilized α-amylase by carbodiimide. Optimum carbodiimide concentration for the coupling of proline to the immobilized α-amylase and the suitable proline concentration for the coupling were determined. Activity of immobilized α-amylase was not altered after coupling to proline. The thermal stability of soluble α-amylase, immobilized α-amylase and immobilized α-amylase-proline conjugates (samples coupled to two different proline concentrations) were studied at 45°c and 60°c. Soluble α-amylase lost its total activity on the 30th and 16th days at 45°c and 60°c respectively. Immobilized α-amylase-proline conjugate < 85.35 μg proline/g gel) lost only 78% activity at 45°c on the 30th day while the same preparation took 20 days at 60°c to lose the total activity. On the other hand the immobilized α-amylase-proline conjugate (785.32 μg proline/g gel) lost only 30% of its original activity at 45°c on the 30th day and took 30 days at 60°c to lose its total activity. These results show that the coupling of proline to immobilized enzymes increases their thermal stability.

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