ENZYMATIC MODIFICATION OF THE L-ASPARAGINASE OF E. coli

I. A. Vina, R. K. Bluma, and R. A. Zhagat

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We have studied the inactivation of L-asparaginase by the method of enzymatic modification and have established the possibility of its cleavage and degradation without loss of enzymatic activity. For this purpose we used a purified L-asparaginase of E. coli B 675 (specific activity ~200 IU/mg of protein) obtained by a known method [1]. The proteolysis of the E. coli L-asparaginase was performed for 30 min [2].

Carboxypeptidase A DFP does not inhibit the activity of L-asparaginase, leucine aminopeptidase decreases it by 25%, and α-chymotrypsin has a considerable inhibiting effect (Table 1). Complete inactivation of the enzyme is observed under the action of trypsin. On incubation for 30 minutes, pepsin somewhat increases the L-asparaginase activity. It possibly stabilizes the L-asparaginase molecule or leads to the splitting off of functional groupings located close to the active center and interfering with the binding of the substrate. A more prolonged incubation of L-asparaginase with pepsin leads to the inhibition of the L-asparaginase activity.

TABLE 1. Inhibition of the Activity of E. coli L-Asparaginase by Enzymes

Compound	pH	T, °C	L-Asparaginase activity, %
Pepsin	4,6	37	130
Carboxypeptidase A	7,6	25	100
α-Chymotrypsin	7,6	37	90
Leucine aminopeptidase	8,5	25	75
Chymotrypsinogen A	7,6	37	65
Papain	—	25	20
Trypsin	8,0	25	0

LITERATURE CITED

1. J. Roberts, G. Burson, and J. M. Hill, J. Bacteriol., 95, 2117 (1968).
2. C. H. Hors, Methods in Enzymology, Vol. XI, New York (1967).

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