

Abstract

Homoserine is an intermediate in the biosynthesis of the essential amino acids Thr and Met in microorganisms [1] and higher plants [2]. Pea seedlings synthesise massive amounts of Hse, mainly in the roots [3-5], although more recent studies suggest that Hse metabolism also takes place in the leaf [6]. Aspartate kinase (EC 2.7.2.4) catalyses the first reaction in Hse biosynthesis, and is subject to complex feedback regulation by Lys, Thr and Met in microorganisms [7]. In various plants aspartate kinase is also inhibited by the same end products (reviewed [8]), but in pea seedlings the enzyme has only been shown to be inhibited by Thr [9]. This paper reports the light-dependent synthesis of Hse from Asp by isolated pea chloroplasts. The enzyme aspartate kinase has been isolated from pea leaves and chloroplasts and found to be sensitive to both Lys and Thr. We believe this is the first report of a Lys-sensitive aspartate kinase in legume plants.