

Pig Liver Phosphomevalonate Kinase. 1. Purification and Properties

Bazaes, Sergio

Beytía, Enrique

de Ovando, Francisco Solís

Gómez, Isabel

Eyzaguirre, Jaime

Jabalquinto, Ana María

Pig liver phosphomevalonate kinase (EC 2.7.4.2) has been purified to homogeneity as shown by polyacrylamide gel electrophoresis. The molecular weight estimates range from 21000 to 22500. Each molecule is composed of one polypeptide chain. The presence of SH-containing reagents is essential for the preservation of enzyme activity at all steps in the purification. The enzyme shows absolute specificity for ATP and requires for activity a divalent metal cation, Mg^{2+} being most effective. The optimum pH for the enzyme ranges from 7.5 to over 9.5. Kinetics are hyperbolic for both substrates, showing a sequential mechanism; true K_m values of 0.075 mM and 0.46 mM have been obtained for phosphomevalonate and ATP, respectively. Amino acid composition shows a high content of acid amino acids, one cysteine residue per molecule of enzyme, and the absence of methionine. The results obtained suggest that the enzyme plays no regulatory function in cholesterol biosynthesis in pig liver, although a vari