Inhibition of hexokinase activity by a fructose 2,6-Bisphosphate-dependent cytosolic protein from liver

Niemeyer, Hermann

Cerpa, Carlos

Rabajille, Eliana

Mammalian and yeast hexokinases were found to be reversibly inhibited by fructose 2,6-bisphosphate, an effect requiring the presence of a cytosolic protein factor. Experimental evidence suggests that this factor (inhibitor) is a regulatory protein, the interactions of which with hexokinases are modulated by fructose 2,6-bisphosphate. The Vmax of hexokinase D was decreased, and no changes on other kinetic parameters were observed. The inhibitor was present in fresh liver cytosol filtered through Sephadex G-25 and was partially isolated by negative absorption on DEAE-cellulose followed by ammonium sulfate fractionation. The inhibitor was also present in brain and kidney, but not in muscle. A molecular mass of 200,000 was determined by gel filtration. The inhibition was dependent on the concentrations of both the inhibitory protein and fructose 2,6-bisphosphate. No delay in fructose 2,6-bisphosphate inhibition was observed. Several other hexose phosphates were tested and were not effectiv