

REGULATION OF A HEART PROTEIN PHOSPHATASE BY ATP.

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The activity of protein phosphatase B (PPTase B) isolated from canine heart is stimulated several fold by nucleoside triphosphates at mM concentrations when phosphohistone serves as the substrate. The activity of PPTase B increases with ATP concentration and reaches a maximum at 3 mM. Concentration of ATP for half maximum stimulation is 1.5 mM. In the presence of equal molar concentration of $MgCl_2$, the concentration of ATP for half maximum stimulation is 3 mM. In the absence of ATP, PPTase B shows a concave up activity vs enzyme concentration curve. In the presence of 2 mM ATP, however, the activity of PPTase B is stimulated and becomes linearly proportional to the enzyme concentration. Thus, ATP stimulates the enzyme activity more at lower than higher concentration of PPTase B. These findings suggest that PPTase B in the diluted state is dissociated into a lower molecular weight, less active form which can be reassociated into a higher molecular weight, more active form by the presence of either ATP, or high enzyme concentration. (Supported by grants from New York Heart Association, American Diabetes Association and NIH Grant GM 19271)

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