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MULTIPLE FORMS OF PROTEIN PHOSPHATASE FROM CANINE HEART: ISOLATION AND PROPERTIES OF A Mg^{2+}/Mn^{2+} -DEPENDENT CASEIN PHOSPHATASE AND A Mn^{2+} -DEPENDENT HISTONE PHOSPHATASE. Heng-Chun Li and Kwang-Jen Hsiao* (Spon: P.G. Katsoyannis), Dept. of Biochemistry, Mt. Sinai Sch. of Med., CUNY, New York, New York 10029.

A Mg^{2+}/Mn^{2+} -dependent casein phosphatase (CPTase) and a Mn^{2+} -dependent histone phosphatase (HPTase) have been isolated from the soluble fraction of canine heart by DEAE-cellulose and gel filtration column chromatography. In the absence of divalent cations, both enzymes were inactive regardless of the phosphoprotein substrate used. CPTase catalyzed a divalent cation dependent ($Mg^{2+}-Mn^{2+}>Co$) dephosphorylation of phosphocasein and showed little activity toward phosphohistone or phosphorylase a. HPTase catalyzed a divalent cation-dependent ($Mn^{2+}>Co^{2+}$) dephosphorylation of both phosphohistone and phosphorylase a and showed almost no activity toward phosphocasein. Ca^{2+} , Fe^{2+} , Cu^{2+} , and Zn^{2+} were not effective for the activation of both CPTase and HPTase. These studies show that, in the heart tissue, there are at least two types of phosphoprotein phosphatase with distinct substrate specificity and divalent cation requirements. (Supported by grants from New York Heart Association and USPHS. NIH Grant GM19271)

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