



肌酸激酶

ACRONYMS: CK and CPK

SYNONYMS: Creatine Kinas

PHYSICAL DESCRIPTION:

Appearance: White to white with a slight yellow cast powder

Molecular Weight: 80,000 to 86,200 depending on reference and method of molecular weight determination.

$E^{1\%}(280)$: 8.76²

pH Optimum: pH 8.8-9.0 for the forward reaction and pH 6.0-7.0 for the reverse reaction.

Salts Present: Dialyzed versus 0.01 M Glycine pH 9.0 prior to lyophilization at a protein concentration of approximately 30 mg/ml.

METHOD OF PREPARATION:

Homogenized rabbit muscle is extracted with an aqueous buffer and filtered. The product is precipitated and crystallized in a series of alcohol fractionation steps, dialyzed and lyophilized. No phosphates are used in the preparation. This is a modification of the procedure of Kuby, S. A.

SOLUBILITY / SOLUTION STABILITY:

Produces a clear colorless to light yellow solution at 5 mg/ml in 0.25 M glycyl-glycine pH 7.4. Solutions in this buffer at a protein concentration of 1 mg/ml or higher can be stored at -20EC for at least six months.

Lower protein concentrations can be supplemented with bovine serum albumin. Unbuffered solutions are less stable and may lose 10% activity in 24 hours at 0-5EC.

STRUCTURE:

Creatine Phosphokinase is a dimer composed predominantly of the skeletal muscle derived homodimer (MM). CK also exists as a heterodimer (MB) particularly



in the myocardium. CK derived from brain tissue consists mainly of the brain source homodimer (BB). The amino acid sequences of the M chain and B chains are about 80% homologous. From the sequence, the molecular weight of the M chain is 43,112.

APPLICATIONS:

CK is a cellular enzyme with a wide tissue distribution. Its physiological role is associated with ATP generation for contractile or transport systems. Increased levels of CK are associated with myocardial infarction, muscular dystrophy, hyperthyroidism, pulmonary infarction and cerebrovascular disease.

Variations in relative isozyme distribution can provide additional information in the diagnosis of these conditions. Yuanye offers several diagnostic kits for these applications.

SUBSTRATES:

Creatine, N-ethylglycocyamine and glyocyamine have been shown to act as substrates for CK. CK is very specific for ATP/ADP. It has been shown that the Mg^{2+} -ATP complex is the actual substrate for the reaction. Mn^{2+} can substitute for Mg^{2+} . Creatinine, D- and L-arginine, histidine and taurocyamine do not act as substrates. The following Michaelis constants (K_m) were reported in Kuby, S. A., et al.:

ATP = 5×10^{-4} M

creatine = 1.6×10^{-2} M

ADP = 8×10^{-4} M

phosphocreatine = 5×10^{-3} M

INHIBITORS:

ADP is a strong inhibitor of the forward reaction competing with ATP. Divalent cations such as Ca^{2+} ($K_i=4.5mM$), Zn^{2+} and Cu^{2+} inhibit CK by competing with Mg^{2+} . Other inhibitors include acetate, acetylsalicylic acid, adenosine, p-aminosalicylic acid, AMP, benzoic acid, bicarbonate, bromide, chloride, pChloromercuribenzoic acid, ethylene oxide, 2,4-fluorodinitrobenzene, iodide, malonic acid, NAD, nitrate, phosphate, pyrophosphate, salicylic acid, sulfate, sulfite, thyroxine, trichloroacetate, L-triiodothyroxine, L-triiodothyronine, and tripolyphosphate.



上海源叶生物科技有限公司
Shanghai yuanye Bio-Technology Co., Ltd
电话: 400-666-5481 传真: 021-55068248
网址: www.shyuanye.com
邮箱: 3008007435@qq.com

UNIT DEFINITION:

One unit will transfer 1.0 micromole of phosphate from phosphocreatine to ADP per minute at pH 7.4 at 30℃。



源叶