

DNA Inhibits the Catalytic Activity of the α Subunit of Protein Kinase CK2

Gatica, Marta

Jacob, Germaine

Allende, Jorge E.

Allende, Catherine C.

The recombinant α subunit of protein kinase CK2 (casein kinase 2) from *Xenopus laevis* is inhibited by the addition of single stranded or double stranded DNA. This inhibition is competitive with the casein substrate, having an apparent K_i of 160 nM for an 86 bp DNA fragment. Assays with a fragment containing the putative promoter of the human CK2 α gene indicated that the affinity of CK2 for this fragment was not greater than that of other unrelated DNA. The inhibitory capacity of DNA toward the protein phosphorylating activity of CK2 α is greatly reduced by the presence of the β subunit which can completely reverse the inhibition. The interaction of CK2 α with DNA can also be assayed by the nitrocellulose filter binding assay. This assay demonstrates that the interaction of CK2 α with the tested DNAs is not sequence specific and that the β subunit can also greatly diminish the binding of CK2 α to DNA. Casein at substrate concentrations also is inhibitory to CK2 α DNA binding. Likewise, polyan