

The phosphorylation of nucleoplasmin by casein kinase-2 is resistant to heparin inhibition

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Highly purified preparations of casein kinase-2 from the nuclei of *Xenopus laevis* oocytes and from calf thymus can phosphorylate in vitro purified nucleoplasmin from *X. laevis* oocytes and eggs. The phosphorylation of nucleoplasmin by both kinase preparations is quite insensitive to heparin in contrast with casein phosphorylation which is completely abolished by heparin concentrations above 10 μ g/ml. However, the phosphorylation of nucleoplasmin and casein are inhibited in a very similar fashion by 5,6-dichloro-1- β -D-ribofuranosylbenzimidazole (DRB), a well characterized specific inhibitor of casein kinase-2. Similarly, nucleoplasmin phosphorylation by the oocyte enzyme can be stimulated several-fold by spermine, another characteristic of this enzyme. These findings indicate that the phosphorylation of nucleoplasmin by purified casein kinase-2, while showing typical response to DRB and spermine, exhibits anomalous behavior in its resistance to heparin inhibition. It is possible that the