

A protein inhibitor of calmodulin-regulated cyclic nucleotide phosphodiesterase in amphibian ovaries

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The cytosol fraction of an extract of *Xenopus laevis* ovaries contains a protein inhibitor that can specifically block the activation of calmodulin-sensitive cyclic nucleotide phosphodiesterase (PDE I) found in that tissue. This inhibitor was purified by DEAE-cellulose chromatography, gel filtration on Sephacryl S-200, and affinity chromatography on calmodulin-Sepharose. It has a molecular weight of approximately 90,000, and is heat-labile and susceptible to inactivation by chymotrypsin. The inhibitor blocks calmodulin activation of cyclic nucleotide phosphodiesterases from amphibian ovary and bovine brain and of the myosin light chain kinase from rabbit smooth muscle, but does not affect the activity of a calmodulin-insensitive cyclic nucleotide phosphodiesterase. The inhibitor not only affects the activation of *Xenopus* PDE I and of the bovine brain phosphodiesterase by calmodulin, but also inhibits the stimulation of these enzymes by lysophosphatidylcholine. The inhibitor also acts on