

# Folylpolyglutamate analogs can inhibit casein kinase II from *Xenopus laevis*

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Polyglutamate analogs of folate and related compounds were tested as inhibitors of casein kinase II (CK II) obtained from *Xenopus laevis*. The inhibitory capacity of the pteroyl, 4-amino-10-methyl pteroyl (the methotrexate aromatic moiety), and p-aminobenzoic acid derivatives increased as the number of  $\gamma$ -glutamates attached went from 2 to 7. The nature of the aromatic head group was also important since hexa- $\gamma$ -glutamic acid had no inhibitory activity while the folylhexaglutamate derivatives were strong inhibitors with relative potency of methotrexate > pteroyl > p-aminobenzoic acid. The inhibition of CK II by methotrexate  $\gamma$ -pentaglutamate was competitive with casein and showed an apparent  $K_i$  of 90  $\mu$ M. © 1992.