

Induction of amphibian oocyte maturation by polyvalent cations and alkaline pH in the absence of potassium ions

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The maturation of *Xenopus laevis* oocytes was studied in media free of added potassium salts. Under these conditions maturation could be triggered by 1 mM Mn^{2+} and La^{3+} and, to a lesser extent, by 2-4 mM Ca^{2+} and Mg^{2+} . Maturation induced by 1.5 mM Mn^{2+} was inhibited by K^+ concentrations above 0.25 mM. Potassium was inhibitory when added up to 2 hr before germinal vesicle breakdown occurred. In potassium-free media, maturation could be induced by incubation of oocytes under mild alkaline media (pH 8.5-9). A high percentage of medium-sized oocytes (stage IV according to Dumont) was induced to mature by progesterone in the absence of potassium. Maturation of oocytes in potassium-free media was normal by the criteria of germinal vesicle breakdown, production of maturation promoting factor, vitelline membrane activation, and inhibition by known maturation inhibitors. © 1979.