Characterization of protein synthesis initiation factor 2 from Xenopus laevis oocytes

Carvallo, Pilar

Mateu, Mauricio G.

Sierra, Jose Manuel

Allende, Jorge E.

The protein synthesis initiation factor 2 (eIF2) from Xenopus laevis oocytes has been extensively purified and characterized. Depending upon the purification scheme, eIF2 containing three subunits (?, ? and ?) with Mr of 160 000, or two subunits (? and ?) with Mr 90 000 can be obtained. The key step for obtaining the three subunit factor is the addition of 30 mM benzamidine to the initial homogenization, since this compound protects the highly sensitive ? subunit from proteolytic degradation. Subunit ? of the oocyte eIF2 can be phosphorylated by the specific kinase from rabbit reticulocytes, whereas subunit ? is phosphorylated by oocyte casein kinase II. The oocyte eIF2 has a KD of 7.2 × 10-8 M for GDP and 3.8 × 10-6 M for GTP. The purified three subunit eIF2 has 0.4 mol of GDP bound/mol of factor. The crude preparations of eIF2 are not affected by Mg2+ in their exchange of guanine nucleotides or in the formation of ternary complexes with GTP and methionyl-tRNA, but these reactions are