

A β Fragment Containing a Repetitive Sequence Induces Bundling of Actin Filaments

Moraga, Daniel M.

Nuñez, Patricio

Garrido, Jorge

Maccioni, Ricardo B.

Abstract: Much indirect evidence suggests that the interconnections of actin microfilaments with the microtubule system are mediated by microtubule-associated proteins (MAPs). In this study we provide new data to support the interaction of a specific tubulin-binding domain on β with actin in vitro. In actin polymerization assays, the synthetic peptide VRSKIGSTENLKHQPGGG, corresponding to the first repetitive sequence of β protein, increased turbidity at 320 nm in a dose-dependent fashion. A salient feature of the β peptide-induced assembly process is the formation of a large amount of actin filament bundles, as revealed by electron microscopic analysis. An increase in the β peptide concentration resulted in a proportional increase in the bundling of actin filaments. It is interesting that a gradual decrease of pH within the range 7.6-4.7 resulted in a higher effect of β peptide in promoting bundles of actin filaments. A similar pH-dependent effect was observed for β protein-induced bun