

Product Information

FK-Binding Protein, human recombinant, expressed in *E. coli*

Catalog Number **F5398**
Storage Temperature 2–8 °C

CAS RN 131144-19-9
Synonym: FKBP 12

Product Description

FK Binding Protein (FKBP 12) is an peptidyl prolyl isomerase that catalyzes the *cis-trans* isomerization of proline peptide bonds in synthetic peptide substrates.

Molecular mass:¹ 10–11 kDa (SDS-PAGE)
pI:¹ 8.8

FKBP 12 is a member of the immunophilin family. This family of soluble receptors is capable of binding one of two major immunosuppressive agents, FK506 or cyclosporin A. FK binding proteins (FKBPs) are receptors for FK506, a potent immune system suppressor used to prevent the rejection of transplanted organs.^{2,3} Binding of this immunosuppressive agent inactivates the enzymatic activity of FKBP 12 as well as other FKBPs.

Complexes of FKBP 12 and FK506 have been shown to inhibit calcineurin, a calcium/calmodulin-dependent serine/threonine phosphatase, which blocks T cell activation by preventing lymphokine gene transcription.⁴ In the absence of immunosuppressive ligands, immunophilins, specifically FKBP 12 and other FKBPs, appear to have a defined cellular role in the modulation of intracellular calcium release. The FKBPs have been shown to be integral parts of three types of calcium release channel complexes: skeletal ryanodine receptors, cardiac ryanodine receptors, and the inositol 1,4,5-trisphosphate receptor. In each case, the FKBPs modulate channel function possibly by enhancing the cooperativity between subunits.⁵

In addition, FKBP 12 has been shown to interact with members of the TGFβ family Type I receptors. It has been shown to exert an inhibitory effect on the signaling pathways through these receptors.⁵

The prolyl isomerase activity of this protein is not involved in any of the immunosuppressive effects.⁵ This protein, as well as other immunophilins, play a role in protein folding by catalyzing the initial slow steps in the folding and rearrangement of proline-containing proteins.

A method for the enzymatic assay of this protein has been published.⁶

This recombinant FK binding protein is supplied in a solution of 50 mM HEPES, pH 8.0, containing 150 mM NaCl, 0.5 mM EDTA, and 1 mM sodium azide.

Purity: ≥90% (SDS-PAGE)

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions

This product can be diluted further with aqueous buffers for use.

Storage/Stability

Solutions of this product should not be frozen.

References

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3. Handschumacher, R.E. et al., Cyclophilin: a specific cytosolic binding protein for cyclosporin A. *Science*, **226(4674)**, 544-547 (1984).
4. Wesselborg, S. et al., Identification of a physical interaction between calcineurin and nuclear factor of activated T Cells (NFATp). *J. Biol. Chem.*, **271**, 1274-1277 (1996).
5. Marks, A. R., Cellular functions of immunophilins. *Physiological Reviews*, **76**, 631-649 (1996).
6. Kofron J.L. et al., Determination of kinetic constants for peptidyl prolyl cis-trans isomerases by an improved spectrophotometric assay. *Biochemistry*, **30**, 6127 (1991).

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