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## ProductInformation

### Biotin-Phe-Ala-Fluoromethyl Ketone

Product Number **B 1932**

Storage Temperature  $-20^{\circ}\text{C}$

Synonyms: Biotin-FA-FMK

#### Product Description

Molecular Formula:  $\text{C}_{23}\text{H}_{31}\text{N}_4\text{O}_4\text{SF}$

Formula Weight: 478.6

Biotin-Phe-Ala-Fluoromethyl Ketone is a cell permeable, biotinylated analog of the cathepsin inhibitor Z-Phe-Ala-Fluoromethyl Ketone (Z-FA-FMK). Z-FA-FMK inhibits the cysteine proteases, Cathepsins B and L,<sup>1</sup> but is not known to inhibit caspase enzymes.<sup>2,3</sup> The concentration range for inhibition is 0.5 to 10  $\mu\text{M}$ . Another similar analog, Biotin-Phe-Ala-diazomethane also inhibits Cathepsin B.<sup>4</sup>

Studies using the irreversible inhibitor, Biotin-FA-FMK, have demonstrated that cysteine proteinases are present in mite species.<sup>1</sup>

Caspases are a group of cysteinyl aspartate-specific proteinases that play a role in apoptosis or programmed cell death<sup>5,6,7</sup> Due to its inhibitory profile, Biotin-FA-FMK is often used as a negative control inhibitor in caspase studies.

FMK is a trapping group responsible for irreversible inhibition, but is non-cytotoxic. Inhibition occurs when the FMK group covalently bonds to the  $-\text{SH}$  moiety of an adjacent cysteine residue on the target protein.

The biotin group allows for detection of the enzyme-inhibitor complex by standard procedures or selective isolation of the complex for further study.

#### Precautions and Disclaimer

This product is for laboratory research use only. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

#### Preparation Instructions

Concentrations up to 20 mM Biotin-FA-FMK may be prepared in dry DMF or DMSO.

#### Storage/Stability

For long term storage, it is recommended to store the product as supplied at  $-20^{\circ}\text{C}$ . The Biotin-FA-FMK may also be stored desiccated at room temperature.

Stock solutions in DMF or DMSO may be stored at  $-20^{\circ}\text{C}$  for up to one year.

#### References

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3. McColl, K.S. et al., Apoptosis induction by the glucocorticoid hormone dexamethasone and the calcium-ATPase inhibitor thapsigargin involves Bc1-2 regulated caspase activation. *Mol. Cell Endocrinol.*, **139**, 229-38 (1999).
4. Walker, B. et al., The synthesis, kinetic characterization and application of a novel biotinylated affinity label for cathepsin B. *Biochem J.*, **283**, 449-53 (1992).
5. Nicholson, D.W., and Thornberry, N.A., Caspases: killer proteases. *Trends Biochem. Sci.*, **22**, 299-306 (1997).
6. Cohen, G.M., Caspases: the executioners of apoptosis. *Biochem. J.*, **326**, 1-16 (1997).
7. Li, J., et al, Nitric oxide suppresses apoptosis via interrupting caspase activation and mitochondrial dysfunction in cultured hepatocytes. *J. Biol. Chem.*, **274**, 17325-17333 (1999).

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