PRODUCT DATA SHEET

Product: **Z-LLY-FMK (Calpain Inhibitor 1)**

Cat. No: AB-050 (3 mg)

Chemical Name:
Z-Leu-Leu-Tyr-CH_2F

Molecular Weight:
557

Form:
Off white solid

Description:
Peptide-fluoromethyl ketone inhibitor of Calpain I and II.

The CH_2F (fluoromethyl ketone) inhibitor has several advantages over other types of derivatives:
- Penetrates cell membranes
- Not toxic to cells
- Irreversible inhibition

Introduction:
The calpains are calcium-activated neutral proteases whose activation leads to apoptosis in neurons. Many cellular processes are regulated by calcium and the activation of calpains by increased calcium in damaged neurons results in apoptosis, which contributes to spinal cord cell death in spinal cord injuries. In axons, calcium influx leads to a compacting of the cytoskeleton and an interruption of axonal transport, most likely through activation of calpains. Calpain I has three isoforms of 80, 78, and 76 kDa, whereas Calpain II is a single 176 kDa protein. Calpain I is activated during neuronal differentiation. Calpain II is activated during neurofibrillary degeneration, suggesting that the calpain system is involved in Alzheimer's Disease.

Specificity:
Specific inhibition of Calpains I and II.

Applications:
Inhibition of calpain activity *in vivo* or *in vitro*.

Solubility:
Soluble in DMSO.

Protocol:
Dissolve the Calpain Inhibitor 1 in DMSO before use.

For use on intact cells:

1. Prepare desired concentrated stock solutions as follows:
   1 mg Z-LLY-FMK in 90 µL DMSO = 20 mM
   in 180 µL DMSO = 10 mM
   in 360 µL DMSO = 5 mM, etc.
2. Add 2 µL of above stock solution to 1 mL culture medium containing cells such that the final DMSO concentration is 0.2%. Levels of DMSO above this may cause some cellular toxicity, thus masking the effect of the Calpain Inhibitor 1. Adding 2 µL of a 10 mM stock solution to 1 mL of culture medium gives a final Z-LLY-FMK concentration of 20 µM.

For extended use *in vivo* or *in vitro*:
For experiments extending 12 to 48 hours, fresh inhibitor may have to be added (injected) due to inactivation of the inhibitor by endogenous cysteine proteases.

Storage:
Solid product stable for greater than 3 years when stored in a desiccator at -20°C. Store at RT short term. We recommend storing DMSO stock solutions at 4°C. DMSO stock solutions are stable for 6-8 months when stored at –20°C. Keep sealed after removing from the freezer until its temperature equilibrates with RT.

Limitations:
For research use only. Not for use in diagnostics or in humans.

Warranty:
No warranties, expressed or implied, are made regarding the use of this product. KAMIYA BIOMEDICAL COMPANY is not liable for any damage, personal injury, or economic loss caused by this product.