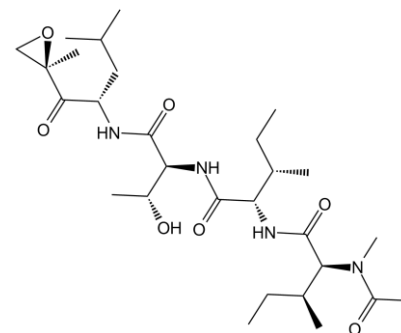


## Product Data Sheet

### Chemical Properties

<b>Product Name:</b>	Epoxomicin
<b>Cas No.:</b>	134381-21-8
<b>M.Wt:</b>	554.7
<b>Formula:</b>	C <sub>28</sub> H <sub>50</sub> N <sub>4</sub> O <sub>7</sub>
<b>Synonyms:</b>	Epoxomicin, BU4061T, BU-4061 T



**Chemical Name:** (2S,3S)-2-[[[(2S,3S)-2-[acetyl(methyl)amino]-3-methylpentanoyl]amino]-N-[(2S,3R)-3-hydroxy-1-[[[(2S)-4-methyl-1-[(2R)-2-methyloxiran-2-yl]-1-oxopentan-2-yl]amino]-1-oxobutan-2-yl]-3-methylpentanamide

**Canonical SMILES:** CCC(C)C(C(=O)NC(C(C)O)C(=O)NC(CC(C)C)C(=O)C1(CO1)C)NC(=O)C(C(C)CC)N(C)C(=O)C

**Solubility:**  $\geq 27.74$ mg/mL in DMSO

**Storage:** Store at -20°C

**General tips:** For obtaining a higher solubility, please warm the tube at 37° C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20° C for several months.

**Shopping Condition:** Evaluation sample solution : ship with blue ice  
All other available size: ship with RT, or blue ice upon request

### Biological Activity

**Targets :** Ubiquitination/ Proteasome

**Pathways:** Proteasome

#### Description:

Epoxomicin was originally isolated from the culture medium of an Actinomycetes strain based on its in vivo antitumor activity against murine B16 melanoma. Epoxomicin is a naturally occurring selective proteasome inhibitor with anti-inflammatory activity. [1] Epoxomicin primarily inhibits

the activity of CTRL (chymotrypsin-like proteasome).

The novel  $\alpha$ -epoxy ketone moiety of Epoxomicin forms covalent bonds with residues in particular catalytic subunits of the enzyme, disabling activity. The trypsin-like and peptidyl-glutamyl peptide hydrolyzing behaviors of the proteasome were both inhibited by Epoxomicin as well (at 100 and 1,000-fold slower rates, respectively). The ubiquitin-proteasome pathway heavily regulates bone formation, and Epoxomicin was shown to increase both bone volume and bone formation rates in rodents.

Another study demonstrates that exposure to Epoxomicin and other proteasome inhibitors leads to dopaminergic cell death, producing a model of Parkinson's disease in vivo. Epoxomicin is an inhibitor of 20S Proteasome. [2]

### **Reference:**

1. Meng, L; Mohan, R; Kwok, BH; Elofsson, M; Sin, N; Crews, CM (1999). "Epoxomicin, a potent and selective proteasome inhibitor, exhibits in vivo antiinflammatory activity". *PNAS* 96 (18): 10403–10408.
2. *Epoxomicin, Santa Cruz Biotechnology.*

## **Protocol**

### **Cell experiment:**

Cell lines	HEK293T cells
Preparation method	The solubility of this compound in DMSO is >10 mM. General tips for obtaining a higher concentration: Please warm the tube at 37 °C for 10 minutes and/or shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.
Reacting conditions	Incubated at 0.2 $\mu$ M or 2 $\mu$ M epoxomicin for 1 hour
Applications	Peptides were degraded by proteasome from cytosolic, mitochondrial, and nuclear proteins. Epoxomicin is a proteasome inhibitor. It decreased the levels of the majority of intracellular peptides, accompanying with inhibition of the proteasome beta-2 and beta-5 subunits in HEK293T cells.

### **Animal experiment [3]:**

Animal models	C57BL6
Dosage form	Epoxomicin (0.58 mg/kg) solubilized in 10% DMSO/PBS were injected i.p. daily for 6 days
Applications	Epoxomicin reduced inflammation in response to picrylchloride. Epoxomicin potently inhibited the irritant-associated inflammatory

response by 95% when ear edema measurements were made 24 hr postchallenge.

#### Other notes

Please test the solubility of all compounds indoor, and the actual solubility may slightly differ with the theoretical value. This is caused by an experimental system error and it is normal.

#### Reference:

1. Fricker LD1, Gelman JS, Castro LM et al. *Peptidomic analysis of HEK293T cells: effect of the proteasome inhibitor epoxomicin on intracellular peptides.* *J Proteome Res.* 2012 Mar 2;11(3):1981-90.
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#### Product Citations

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## Caution

**FOR RESEARCH PURPOSES ONLY.**

**NOT FOR HUMAN, VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.**

*Specific storage and handling information for each product is indicated on the product datasheet. Most ApexBio products are stable under the recommended conditions. Products are sometimes shipped at a temperature that differs from the recommended storage temperature. Short-term storage of many products are stable in the short-term at temperatures that differ from that required for long-term storage. We ensure that the product is shipped under conditions that will maintain the quality of the reagents. Upon receipt of the product, follow the storage recommendations on the product data sheet.*

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