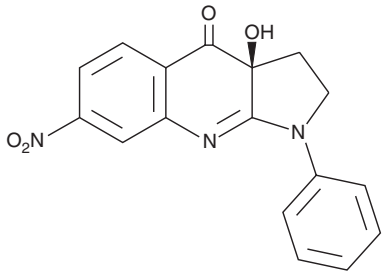
PRODUCT INFORMATION

(S)-nitro-Blebbistatin

Item No. 13891

CAS Registry No.:	856925-75-2
Formal Name:	(3aS)-1,2,3,3a-tetrahydro-3a-hydroxy-7-nitro-1-phenyl-4H-pyrrolo[2,3-b]quinolin-4-one
Synonym:	S-(-)-7-Desmethyl-8-nitro Blebbistatin
MF:	$C_{17}H_{13}N_3O_4$
FW:	323.3
Purity:	≥98%
UV/Vis.:	λ_{max}: 234, 271, 315, 445 nm
Supplied as:	A crystalline solid
Storage:	-20°C
Stability:	≥4 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

(S)-nitro-Blebbistatin is supplied as a crystalline solid. A stock solution may be made by dissolving the (S)-nitro-blebbistatin in the solvent of choice, which should be purged with an inert gas. (S)-nitro-Blebbistatin is soluble in organic solvents such as DMSO and dimethyl formamide. The solubility of (S)-nitro-blebbistatin in these solvents is approximately 16 mg/ml.

(S)-nitro-Blebbistatin is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, (S)-nitro-blebbistatin should first be dissolved in DMSO and then diluted with the aqueous buffer of choice. (S)-nitro-Blebbistatin has a solubility of approximately 0.5 mg/ml in a 1:1 solution of DMSO:PBS (pH 7.2) using this method. We do not recommend storing the aqueous solution for more than one day.

Description

(S)-nitro-Blebbistatin is a more stable form of (–)-blebbistatin (Item No. 13013), which is a selective cell-permeable inhibitor of non-muscle myosin II ATPases.[1,2] (–)-Blebbistatin rapidly and reversibly inhibits Mg-ATPase activity and *in vitro* motility of non-muscle myosin IIA and IIB for several species (IC_{50}s= 0.5-5 µM), while poorly inhibiting smooth muscle myosin (IC_{50} = 80 µM).[3] Through these effects, it blocks apoptosis-related bleb formation, directed cell migration, and cytokinesis in vertebrate cells. However, prolonged exposure to blue light (450-490 nm) results in degradation of blebbistatin to an inactive product *via* cytotoxic intermediates, which may be problematic for its use in fluorescent live cell imaging applications.[4,5] The addition of a nitro group stabilizes the molecule to circumvent its degradation by prolonged blue light exposure.[6] (S)-nitro-Blebbistatin has the same stereochemistry as the active (–)-blebbistatin enantiomer.

References

1. Straight, A.F., Cheung, A., Limouze, J., *et al. Science* **299(5613)**, 1743-1747 (2003).
2. Kovács, M., Tóth, J., Hetényi, C., *et al. J. Biol. Chem.* **279(34)**, 35557-35563 (2004).
3. Limouze, J., Straight, A.F., Mitchison, T., *et al. J. Muscle Res. Cell Motil.* **25(4-5)**, 337-341 (2004).
4. Kolega, J. *Biochem. Biophys. Res. Commun.* **320(3)**, 1020-1025 (2004).
5. Sakamoto, T., Limouze, J., Combs, C.A., *et al. Biochemistry* **44(2)**, 584-588 (2005).
6. Lucas-Lopez, C., Patterson, S., Blum, T., *et al. European J. Org. Chem.* **9**, 1736-1740 (2005).

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