

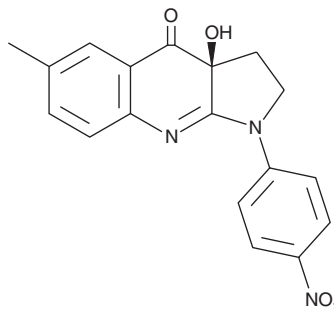
# PRODUCT INFORMATION



## (S)-4'-nitro-Blebbistatin

Item No. 24171

**CAS Registry No.:** 1621326-32-6  
**Formal Name:** (3aS)-1,2,3,3a-tetrahydro-3a-hydroxy-6-methyl-1-(4-nitrophenyl)-4H-pyrrolo[2,3-b]quinolin-4-one  
**Synonyms:** (-)-4'-nitro-Blebbistatin, *p*-nitro-Blebbistatin, *para*-nitro-Blebbistatin  
**MF:** C<sub>18</sub>H<sub>15</sub>N<sub>3</sub>O<sub>4</sub>  
**FW:** 337.3  
**Purity:** ≥95%  
**UV/Vis.:** λ<sub>max</sub>: 260, 414 nm  
**Supplied as:** A crystalline solid  
**Storage:** -20°C  
**Stability:** ≥2 years



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

### Laboratory Procedures

(S)-4'-nitro-Blebbistatin is supplied as a crystalline solid. A stock solution may be made by dissolving the (S)-4'-nitro-blebbistatin in the solvent of choice. (S)-4'-nitro-Blebbistatin is soluble in organic solvents such as DMSO and dimethyl formamide (DMF), which should be purged with an inert gas. The solubility of (S)-4'-nitro-blebbistatin in these solvents is approximately 12.5 and 20 mg/ml, respectively.

(S)-4'-nitro-Blebbistatin is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, (S)-4'-nitro-blebbistatin should first be dissolved in DMF and then diluted with the aqueous buffer of choice. (S)-4'-nitro-Blebbistatin has a solubility of approximately 0.5 mg/ml in a 1:1 solution of DMF:PBS (pH 7.2) using this method. We do not recommend storing the aqueous solution for more than one day.

### Description

(S)-4'-nitro-Blebbistatin is a more stable and less phototoxic form of (-)-blebbistatin (Item No. 13013), which is a selective cell-permeable inhibitor of non-muscle myosin II ATPases.<sup>1,2</sup> (-)-Blebbistatin rapidly and reversibly inhibits Mg-ATPase activity and *in vitro* motility of non-muscle myosin IIA and IIB for several species (IC<sub>50</sub>s = 0.5-5 μM), while poorly inhibiting smooth muscle myosin (IC<sub>50</sub> = 80 μM).<sup>3</sup> 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.<sup>4,5</sup> The addition of a 4'-nitro group decreases the inherent fluorescence, stabilizes the molecule to circumvent its degradation by prolonged blue light exposure, and decreases its phototoxicity while retaining the *in vitro* and *in vivo* activity of (-)-blebbistatin.<sup>6,7</sup> (S)-4'-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. Képiró, M., Várkuti, B.H., Végner, L., *et al.* *Angew Chem. Int. Ed. Engl.* **53**(31), 8211-8215 (2014).
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#### WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

#### SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

#### WARRANTY AND LIMITATION OF REMEDY

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