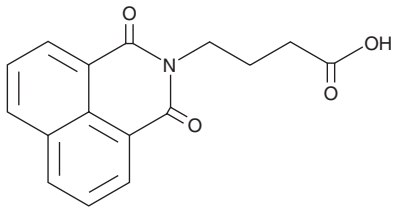
PRODUCT INFORMATION

Virstatin

Item No. 21176

CAS Registry No.:	88909-96-0
Formal Name:	1,3-dioxo-1H-benz[de] isoquinoline-2(3H)-butanoic acid
MF:	$C_{16}H_{13}NO_4$
FW:	283.3
Purity:	≥98%
UV/Vis.:	λ_{max}: 214, 234 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

Virstatin is supplied as a crystalline solid. A stock solution may be made by dissolving the virstatin in the solvent of choice, which should be purged with an inert gas. Virstatin is soluble in organic solvents such as DMSO and dimethyl formamide. The solubility of virstatin in these solvents is approximately 33 mg/ml.

Virstatin is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, virstatin should first be dissolved in DMSO and then diluted with the aqueous buffer of choice. Virstatin has a solubility of approximately 0.25 mg/ml in a 1:3 solution of DMSO:PBS (pH 7.2) using this method. We do not recommend storing the aqueous solution for more than one day.

Description

Virstatin is an inhibitor of the ToxT transcriptional regulator of *V. cholerae*, which regulates transcription of virulence factors that enable intestinal colonization.[1] It inhibits ToxT dimerization and decreases expression of cholera toxin (CT) and toxin coregulated pilus (TCP) when used at a concentration of 50 µM but virstatin does not inhibit growth of *V. cholerae* at this concentration (MBCs = 600 and 1,200 µM for O395 and C6706 strains, respectively).[1,2] Virstatin administration protects infant mice (5 to 6 days old) from intestinal colonization by ToxT-dependent *V. cholerae* but not from strains that colonize *via* non-ToxT-dependent mechanisms. Virstatin (100 µM) inhibits biofilm formation by *A. baumannii* by 38% under static conditions, which is at a lower concentration than that which inhibits growth (MIC = 1.6 mM).[3] It decreases the motility of 60% of 30 mobile *A. baumannii* strains. Virstatin also binds to the accessory cholera enterotoxin (Ace) from *V. cholerae* (K_a = 9 x 10^4 M^{-1}; K_d = 11 µM).[4]

References

1. Hung, D.T., Shakhnovich, E.A., Pierson, E.E., *et al.* Small-molecule inhibitor of *Vibrio cholerae* virulence and intestinal colonization. *Science* **310(5748)**, 670-674 (2005).
2. Shakhnovich, E.A., Hung, D.T., Pierson, E., *et al*. Virstatin inhibits dimerization of the transcriptional activator ToxT. *Proc. Nat. Acad. Sci. USA* **104(7)**, 2372-2377 (2007).
3. Chabane, Y.N., Mlouka, M.B., Alexandre, S., *et al*. Virstatin inhibits biofilm formation and motility of *Acinetobacter baumannii*. *BMC Microbiol*. **14(62)** (2014).
4. Chatterjee, T.K., Mukherjee, D., Dey, S., *et al*. Accessory cholera enterotoxin, Ace, from *Vibrio cholerae*: Structure, unfolding, and virstatin binding. *Biochemistry* **50(14)**, 2962-2972 (2011).

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