Quinacrine Inhibitor

Catalog No:	**NBP2-29385**
Content:	**200 mg**
Storage:	The solid powder is stable in the desiccators at room temperature for 1 year. Water-reconstituted quinacrine solution is stable for up to 1 month at 4°C.
Species Reactivity:	N/A
Form:	Yellow Solid (Powder)
Inhibitor Mechanism:	Endosomal toll-like receptor inhibitor (antagonist); Inhibitor of endosomal acidification on which functional activity of endosomal TLRs (particularly TLR9 and TLR3) is dependent.

Background

Quinacrine is a weak base which can partition into acidic vesicles such as endosomes and lysosomes, resulting in inhibition of endosomal acidification and lysosomal enzyme activity. Because acidic pH of endosomes is a prerequisite of endosomal TLR activation, quinacrine can serve as an antagonist for endosomal TLRs. Quinacrine and its analog chloroquine are also known to act as therapeutic agents for autoimmune diseases such as rheumatoid arthritis and systemic lupus erythematosus, of which therapeutic activity is due to suppression of TLR9 activity as shown by researchers.

Solubility

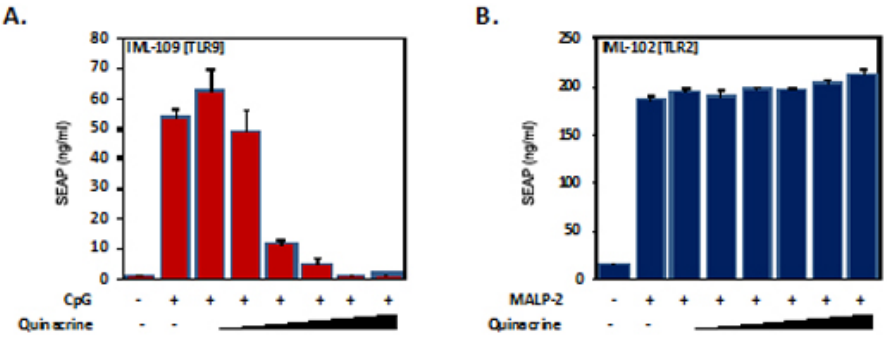
Deionized water

Usage:

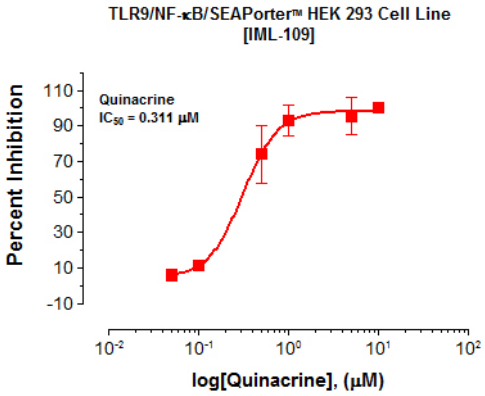
Product Handling Protocol

1. To make 100 mM stock solution, dissolve 200 mg quinacrine in 4.2 ml water by gentle vortex.
2. Filter sterilize through a 0.22 um filter.
3. Store at 4°C (Note: Quinacrine solution is light sensitive.).
4. For TLR signaling inhibition study, perform a pilot inhibitory test with the different concentrations of quinacrine ranging from 1 to 10 uM to optimize your experiments.

Note: See our validation tests using the NBP2-26280 (quinacrine sensitive) and NBP2-26274 (quinacrine insensitive) cell lines as shown in Figures 1 and 2.



Evaluation of inhibitory activity of quinacrine. TLR9/NF-kB/SEAPorter™ HEK 293 (NBP2-26280) and TLR2/NF-kB/SEAPorter™ HEK 293 (NBP2-26274) cells were plated in 96-well plates at 5x10^4 cells/well for 16 h. Cells were preincubated with different concentrations of quinacrine (0.05, 0.1, 0.5, 1, 5 and 10 uM) for 30 min. Cell were then stimulated with 10 ug/ml CpG (NBP2-26232) [A] or 20 ng/ml MALP-2 (NBP2-26219) [B] for 24 h. Secreted alkaline phosphatase (SEAP) was analyzed using SEAPorter™ Assay Kit (NBP2-25285).



IC50 evaluation of quinacrine . TLR9/NF-kB/SEAPorter™ HEK 293 (NBP2-26280) cells were plated in 96-well plates at 5x10^4 cells/well for 16 h. Cells were preincubated with various concentrations of quinacrine for 30 min, followed by stimulation with 10 µg/ml CpG (NBP2-26232) for 24 h. SEAP was analyzed using SEAPorter™ Assay Kit (NBP2-25285). Dose-responsive percent inhibition of each sample well was calculated to yield the quinacrine IC50 value.

Reference:

1. Macfarlane, D. E. et al. (1998). Antagonism of immunostimulatory CpG-oligodeoxynucleotides by quinacrine, chloroquine, and structurally related compounds. *J. Immunol.* 160, 1122-1131.
2. Rutz, M. et al. (2004). Toll-like receptor 9 binds single-stranded CpG-DNA in a sequence- and pH-dependent manner. *Eur. J. Immunol.* 34, 2541-2550.
3. Marshak-Rothstein, A. (2006). Toll-like receptors in systemic autoimmune disease. *Nat. Rev. Immunol.* 6, 823-835.