# Small Molecules

## Hydroxychloroquine

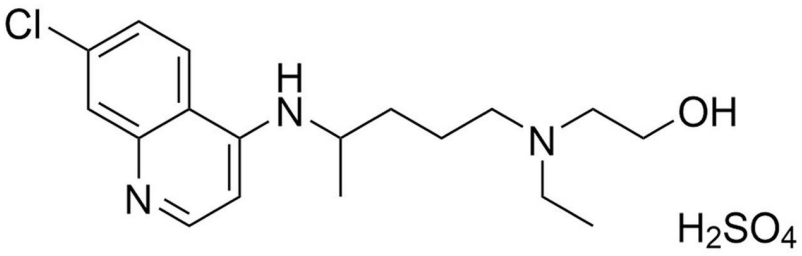
Inhibits autophagy and heme polymerase

| | | |
|---|---|---|
| Catalog # | 74212 | 50 mg |
| | 74214 | 100 mg |

STEMCELL™ TECHNOLOGIES
Scientists Helping Scientists™ | WWW.STEMCELL.COM
TOLL FREE PHONE 1 800 667 0322 • PHONE +1 604 877 0713
INFO@STEMCELL.COM • TECHSUPPORT@STEMCELL.COM
FOR GLOBAL CONTACT DETAILS VISIT OUR WEBSITE

## Product Description

Hydroxychloroquine is a synthetic derivative of quinolyl. It increases the pH within intracellular vacuoles and alters processes such as protein degradation by acidic hydrolases, assembly of macromolecules, and post-translation modification of proteins (Fox). By doing this, it prevents the stimulation of CD4+ cells, thus down-regulating the immune response (Fox). Hydroxychloroquine is also a potent autophagy inhibitor (van Loosdregt et al.) and heme polymerase inhibitor (Chou & Fitch). This product is supplied as the sulfate salt of the molecule.

| | |
|---|---|
| Molecular Name: | Hydroxychloroquine (Sulfate) |
| Alternative Names: | HCQ; NSC 4375 |
| CAS Number: | 747-36-4 |
| Chemical Formula: | $C_{18}H_{26}ClN_3O \bullet H_2SO_4$ |
| Molecular Weight: | 434.0 g/mol |
| Purity: | ≥ 95% |
| Chemical Name: | 2-({4-[(7-chloroquinolin-4-yl)amino]pentyl}(ethyl)amino)ethan-1-ol;sulfuric acid |
| Structure: |  |



## Properties

| | |
|---|---|
| Physical Appearance: | A crystalline solid |
| Storage: | Product stable at -20°C as supplied. Protect product from prolonged exposure to light. For long-term storage, store with a desiccant.<br>Stable as supplied for 12 months from date of receipt. |
| Solubility: | · PBS (pH 7.2) ≤ 10 mM<br>For example, to prepare a 5 mM stock solution in PBS, resuspend 10 mg in 4.61 mL of PBS (pH 7.2).<br><br>Prepare stock solution fresh before use. Information regarding stability of small molecules in solution has rarely been reported, however, as a general guide we recommend storage in PBS at -20°C. Aliquot into working volumes to avoid repeated freeze-thaw cycles. The effect of storage of stock solution on compound performance should be tested for each application.<br><br>For use as a cell culture supplement, stock solution should be diluted into culture medium immediately before use. |

## Published Applications

IMMUNOLOGY
· Inhibits the survival pathway of autophagy by preventing the degradation of autophagosomes, resulting in increased apoptosis of human CD4+CD45RO+ memory and effector T cells (van Loosdregt et al.).
CANCER RESEARCH
· In combination with various other treatments, increases the overall response rate, progression-free survival, and 1-year overall survival rate of cancer therapies (for glioblastoma, brain metastases due to non-small-cell lung cancer and breast cancer, pancreatic ductal adenocarcinoma [PDAC], non-Hodgkin lymphoma, metastatic PDAC, and pancreatic cancer), when compared to cancer therapies that do not utilize autophagy inhibition (Xu et al.).

## References

Chou AC & Fitch CD. (1992) Heme polymerase: modulation by chloroquine treatment of a rodent malaria. Life Sci 51(26): 2073–8.
Fox RI. (1993) Mechanism of action of hydroxychloroquine as an antirheumatic drug. Semin Arthritis Rheum 23(2 Suppl 1): 82–91.
van Loosdregt J et al. (2013) Hydroxychloroquine preferentially induces apoptosis of CD45RO+ effector T cells by inhibiting autophagy: A possible mechanism for therapeutic modulation of T cells. J Allergy Clin Immunol 131(5): 1443–6.e1.
Xu R et al. (2018) The clinical value of using chloroquine or hydroxychloroquine as autophagy inhibitors in the treatment of cancers. Medicine (Baltimore) 97(46): e12912.

## Related Small Molecules

For a complete list of small molecules available from STEMCELL Technologies, visit www.stemcell.com/smallmolecules or contact us at techsupport@stemcell.com.

This product is hazardous. Please refer to the Safety Data Sheet (SDS).