# Product Data Sheet

Product Name: 6,7-Dimethyltetrahydropterin (hydrochloride)
Cat. No.: GC10868

## Chemical Properties

| | | | |
|---|---|---|---|
| Cas. No. | 167423-51-0 | | |
| Chemical Name | 2-amino-5,6,7,8-tetrahydro-*cis*-6,7-dimethyl-4(1H)-pteridinone, hydrochloride | | |
| SMILES | C[C@@H]1Nc2c(N[C@@H]1C)[nH]c(N)nc2=O | | |
| Formula | $C_8H_{13}N_5O$ • HCl | M.Wt | 231.7 |
| Solubility | Soluble in Water | Storage | Store at -20°C |
| General tips | For obtaining a higher solubility , please warm the tube at 37 ℃ and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20℃ for several months. | | |
| Shipping Condition | Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request. | | |
| Structure | | | |

## Background

IC50: 76-112 μM for GTP cyclohydrolase I

6,7-Dimethyltetrahydropterin is a GTP cyclohydrolase I inhibitor.

GTP cyclohydrolase I catalyzes the formation of D-erythro-7,8-dihydroneopterin (dihydroneopterin) triphosphate and formate from GTP. Dihydroneopterin triphosphate has been identified as a critical intermediate in the biosynthesis of folic acid, pteridines in insects and amphibians, and tetrahydrobiopterin. Tetrahydrobiopterin is the obligatory cofactor for tyrosine and tryptophan hydroxylase, which are rate-limiting enzymes for biogenic amine synthesis. Tetrahydrobiopterin is the cofactor for phenylalanine hydroxylase as well, which converts Lphenylalanine to L-tyrosine.

In vitro: Previous study identified 6,7-dimethyltetrahydropterin as a noncompetitive inhibitor of GTP cyclohydrolase. However, no substrate inhibition of the enzyme was detected 1mM GTP, which is about 8-fold the Km value of the enzyme [1]. Another study


***Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com***
***Address: 10292 Central Ave. #205, Montclair, CA, USA***

found that phenylalanine hydroxylase could be inhibited by 6,7-dimethyltetrahydropterin, its cofactor. The rate of inactivation, which was irreversible, increased with the concentration of 6,7-dimethyltetrahydropterin. Moreover, 6,7-dimethyltetrahydropterin was found to be unstable when the solution was exposed to air but was stabilized by dithiothreitol the aerobic oxidation of which was significantly accelerated by 6,7-dimethyltetrahydropterin [2].

In vivo: Up to now, there is no animal in vivo data reported.

Clinical trial: So far, no clinical study has been conducted.

References:
[1] Shen, R. ,Alam, A. and Zhang, Y. Inhibition of GTP cyclohydrolase I by pterins. Biochimica et Biophysica Acta 965, 9-15 (1988).
[2] Jakubovic A, Woolf LI, Chan-Henry E.  The inactivation of phenylalanine hydroxylase by 2-amino-4-hydroxy-6,7-dimethyltetrahydropteridine and the aerobic oxidation of the latter. The effects of catalase, dithiothreitol and reduced nicotinamide-adenine dinucleotide. Biochem J. 1971 Nov;125(2):563-8.