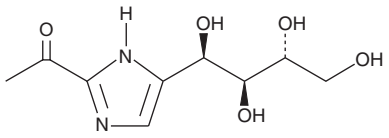
PRODUCT INFORMATION

2-Acetyl-5-tetrahydroxybutyl Imidazole

Item No. 13222

CAS Registry No.:	94944-70-4
Formal Name:	1-[5-[(1R,2S,3R)-1,2,3,4-tetrahydroxybutyl]-1H-imidazol-2-yl]-ethanone
Synonyms:	2-Acetyl-4-tetrahydroxybutyl Imidazole, 2-ATHBI, THI
MF:	$C_9H_{14}N_2O_5$
FW:	230.2
Purity:	≥95%
UV/Vis.:	λ_{max}: 288 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

2-Acetyl-5-tetrahydroxybutyl imidazole (THI) is supplied as a crystalline solid. A stock solution may be made by dissolving the THI in the solvent of choice, which should be purged with an inert gas. THI is soluble in the organic solvent DMSO at a concentration of approximately 2 mg/ml.

Further dilutions of the stock solution into aqueous buffers or isotonic saline should be made prior to performing biological experiments. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. Organic solvent-free aqueous solutions of THI can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of THI in PBS (pH 7.2) is approximately 0.15 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

THI is an inhibitor of sphingosine-1-phosphate (S1P) lyase *in vivo*.[1] THI is not active at S1P lyase in cell-free or cell-based assays but is converted to A6770 *in vivo*, which is subsequently activated by phosphorylation.[2] In mice, THI (50 µg/ml in drinking water) increases S1P levels by 100-fold in lymphoid tissue and reduces lymphocyte egress from thymus and peripheral lymphoid organs.[1,3] The resulting lymphopenia is reversible following cessation of THI treatment.[4]

References

1. Schwab, S.R., Pereira, J.P., Matloubian, M., *et al.* Lymphocyte sequestration through S1P lyase inhibition and disruption of S1P gradients. *Science* **309(5741)**, 1735-1739 (2005).
2. Ohtoyo, M., Machinaga, N., Inoue, R., *et al.* Compoent of caramel food coloring, THI, causes lymphopenia indirectly *via* a key metabolic intermediate. *Cell Chem. Biol.* **23(5)**, 555-560 (2016).
3. Gugasyan, R., Coward, A., O'Connor, L., *et al.* Emigration of mature T cells from the thymus is inhibited by the imidazole-based compound 2-acetyl-4-tetrahydroxybutylimidazole. *Immunology* **93(3)**, 398-404 (1998).
4. Bradbury, M.G., Doherty, K.V., Parish, C.R., *et al.* The immunosuppressive compound 2-acetyl-4-tetrahydroxybutyl imidazole inhibits the allogeneic mixed lymphocyte reaction by sequestration of a recirculating subpopulation of T cells. *Immunology* **87(1)**, 80-85 (1996).

CAYMAN CHEMICAL
1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA
PHONE: [800] 364-9897
[734] 971-3335
FAX: [734] 971-3640
CUSTSERV@CAYMANCHEM.COM
WWW.CAYMANCHEM.COM