

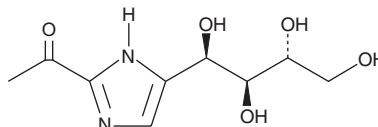
Product Information



2-Acetyl-5-tetrahydroxybutyl Imidazole

Catalog 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: C₉H₁₄N₂O₅
FW: 230.2
Purity: ≥95%
Stability: ≥2 years at -20°C
Supplied as: A crystalline solid



Laboratory Procedures

For long term storage, we suggest that 2-acetyl-5-tetrahydroxybutyl imidazole (THI) be stored as supplied at -20°C. It should be stable for at least two years.

THI is supplied as a crystalline solid. THI is sparingly soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide. For biological experiments, we suggest that organic solvent-free aqueous solutions of THI be prepared by directly dissolving the crystalline solid compound 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.

Sphingosine-1-phosphate (S1P) lyase catalyzes the irreversible decomposition of S1P to hexadecanaldehyde and phosphoethanolamine. THI is an inhibitor of S1P lyase.¹ Because S1P lyase is primarily expressed in lymphatic tissue, treatment of mice with THI (50 µg/ml in drinking water) increases lymphoid tissue S1P concentrations 100-fold, reducing lymphocyte egress from thymus and peripheral lymphoid organs.^{1,2} The resulting lymphopenia is reversible following cessation of THI treatment.³ Reducing S1P lyase activity results in therapeutic levels of immunosuppression without the non-lymphoid lesions that result from synthetic S1P receptor agonists.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**, 1735-1739 (2005).
2. 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**, 398-404 (1998).
3. 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**, 80-85 (1996).
4. Vogel, P., Donoviel, M.S., Read, R., *et al.* Incomplete inhibition of sphingosine 1-phosphate lyase modulates immune system function yet prevents early lethality and non-lymphoid lesions. *PLoS One* **4**(1), (2009).

Related Products

Hexadecanal-d₅ - Cat. No. 16834 • Sphingosine-1-phosphate - Cat. No. 62570

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WARNING: THIS PRODUCT IS FOR LABORATORY RESEARCH ONLY: NOT FOR ADMINISTRATION TO HUMANS. NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

MATERIAL SAFETY DATA

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