

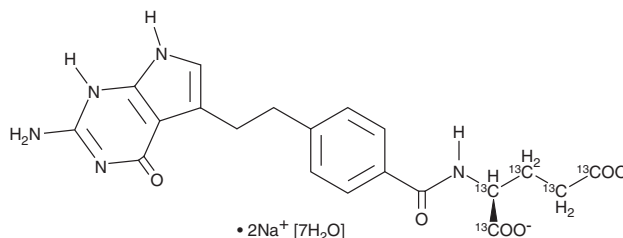
PRODUCT INFORMATION



Pemetrexed- $^{13}\text{C}_5$ (sodium salt hydrate)

Item No. 26677

Formal Name: N-[4-[2-(2-amino-4,7-dihydro-4-oxo-3H-pyrrolo[2,3-d]pyrimidin-5-yl)ethyl]benzoyl]-L-glutamic acid- $^{13}\text{C}_5$, disodium salt, heptahydrate
MF: $\text{C}_{15}[^{13}\text{C}]_5\text{H}_{19}\text{N}_5\text{O}_6 \cdot 2\text{Na} [7\text{H}_2\text{O}]$
FW: 602.5
Purity: $\geq 98\%$
Supplied as: A 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

Pemetrexed- $^{13}\text{C}_5$ (sodium salt hydrate) is supplied as a solid. A stock solution may be made by dissolving the pemetrexed- $^{13}\text{C}_5$ (sodium salt hydrate) in the solvent of choice, which should be purged with an inert gas. Pemetrexed- $^{13}\text{C}_5$ (sodium salt hydrate) is slightly soluble in DMSO.

Pemetrexed- $^{13}\text{C}_5$ (sodium salt hydrate) is slightly soluble in aqueous solutions. To enhance aqueous solubility, dilute the organic solvent solution into aqueous buffers or isotonic saline. If performing biological experiments, ensure the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. We do not recommend storing the aqueous solution for more than one day.

Description

Pemetrexed- $^{13}\text{C}_5$ is intended for use as an internal standard for the quantification of pemetrexed (Item No. 14269) by GC- or LC-MS. Pemetrexed is an antifolate with anticancer activity.¹⁻³ It is an inhibitor of folate-dependent enzymes involved in purine synthesis, including thymidylate synthase and dihydrofolate reductase (K_i s = 109 and 7 nM, respectively, for the human recombinant enzymes), and the potency for thymidylate kinase is increased following polyglutamination of pemetrexed (K_i = 1.3 nM for pemetrexed-glu5).^{1,2} Pemetrexed is an inhibitor of other nucleotide metabolism enzymes in a polyglutamination-dependent manner, including glycylamide ribonucleotide formyltransferase, with K_i values of 9,300 and 65 nM for the non-glutaminated and polyglutaminated mouse recombinant enzyme, respectively, and aminoimidazole carboxamide ribonucleotide formyltransferase, with K_i values of 3,600 and 265 nM for the non-glutaminated and polyglutaminated human enzyme, respectively. It inhibits proliferation of CCRF-CEM cells but not 5,10-dideazatetrahydrofolate-resistant CR15 cells (IC_{50} s = 0.254 and 200 μM , respectively).¹ Pemetrexed (100 mg/kg, i.p.) reduces tumor growth in A549, H1299, and PC-9 non-small cell lung cancer cell (NSCLC) mouse xenograft models but not in models using the same cell lines overexpressing thymidylate kinase.³

References

1. Shih, C., Chen, V.J., Gossett, L.S., *et al.* LY231514, a pyrrolo[2,3-d]pyrimidine-based antifolate that inhibits multiple folate-requiring enzymes. *Cancer Res.* **57**(6), 1116-1123 (1997).
2. Hanauske, A.R., Chen, V., Paoletti, P., *et al.* Pemetrexed disodium: A novel antifolate clinically active against multiple solid tumors. *Oncologist* **6**(4), 363-373 (2001).
3. Takezawa, K., Okamoto, I., Okamoto, W., *et al.* Thymidylate synthase as a determinant of pemetrexed sensitivity in non-small cell lung cancer. *Br. J. Cancer* **104**(10), 1594-1601 (2011).

WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the [complete](#) Safety Data Sheet, which has been sent via email to your institution.

WARRANTY AND LIMITATION OF REMEDY

Buyer agrees to purchase the material subject to Cayman's Terms and Conditions. Complete Terms and Conditions including Warranty and Limitation of Liability information can be found on our website.

Copyright Cayman Chemical Company, 11/29/2022

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