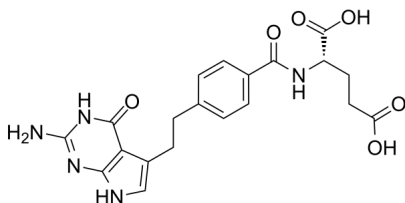


Certificate of Analysis

Catalog Number	BP12436
Product Name	Pemetrexed

Physical and Chemical Properties

Synonyms	LY231514, Pemetrexed acid, LY-231514 Disodium Hydrate
CAS No.	137281-23-3
Chemical Formula	C ₂₀ H ₂₁ N ₅ O ₆
Molecular Weight	427.41
Solubility	DMSO: 100 mg/mL (233.97 mM)
Storage	Powder: -20°C for 2 years In solvent: -80°C for 1 year
Chemical Structure OR Tested Image	 <p>The chemical structure of Pemetrexed is shown. It consists of a guanine ring system (a fused bicyclic structure with an amino group at position 2 and a carbonyl at position 6) attached via a methylene chain to a para-substituted benzene ring. This benzene ring is further attached via another methylene chain to a chiral center. This chiral center is bonded to a hydrogen atom, a hydroxyl group (OH), and an amide group (-NH-). The amide group is further attached to a methylene chain, which is then attached to a carboxylic acid group (-COOH).</p>

Product Information

Description	Pemetrexed, a guanine-derived antineoplastic agent, binds to and inhibits the enzyme thymidylate synthase (TS).
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Targets&IC50	thymidylate synthase (TS):1.3 nM(ki), dihydrofolate reductase (DHFR):7.2 nM(ki), glycineamide ribonucleotide formyltransferase (GARFT):65 nM(ki)
In vitro	Pemetrexed (LY231514) disodium is a novel classical antifolate, the antitumor activity of which may result from simultaneous and multiple inhibition of several key folate-requiring enzymes via its polyglutamated metabolites. Pemetrexed (LY231514) is one of the best substrates that is known for the enzyme FPGS ($K_m=1.6 \mu M$ and $V_{max}/K_m=621$). It is likely that polyglutamation and the polyglutamated metabolites of LY231514 play profound roles in determining both the selectivity and the antitumor activity of this novel agent. Whereas LY231514 only moderately inhibits TS ($K_i=340 \text{ nM}$, recombinant mouse), the pentaglutamate of LY231514 is 100-fold more potent ($K_i=3.4 \text{ nM}$), making LY231514 one of the most potent folate-based TS inhibitors.
In vivo	The group of mice treated with PC61 plus Pemetrexed demonstrates statistically longer survival than other groups. In a survival analysis, significantly better survival is observed in the group of mice treated with PC61 plus Pemetrexed compared with those treated with PC61 alone, rat IgG plus Pemetrexed, or no treatment.

Analytical Data

HPLC	Shows Min >99% purity
H-NMR	Consistent with structure
Stability and Solubility Advice	Information on product stability, especially in solution, has rarely been reported and in most cases we can only provide a general guideline. We recommend that once the stock solution has been prepared, it be stored in equal quantities in sealed vials and used within 1 month. Avoid repeated freezing and thawing cycles. Storage conditions for some special products should be referred to their storage details.

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