

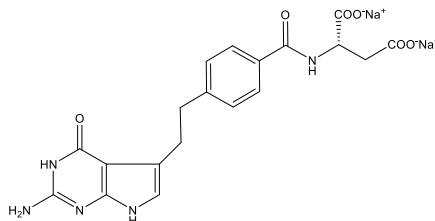
Catalog # 10-2162

Pemetrexed-2Na

CAS# 357166-29-1

N-[4-[2-(2-Amino-4,7-dihydro-4-oxo-3*H*-pyrrolo[2,3-*d*]pyrimidin-5-yl)ethyl]benzoyl]-L-glutamic acid, disodium salt;
LY231514

Lot # X105067



Pemetrexed is a multi-targeted antifolate with antitumor activity. It potently inhibits folate-dependent enzymes involved in both purine and pyrimidine synthesis including thymidylate synthase ($K_i = 109$ nM), dihydrofolate reductase ($K_i = 7$ nM), glycinamide ribonucleotide formyltransferase ($K_i = 9.3$ μ M), and aminoimidazole carboxamide ribonucleotide formyltransferase ($K_i = 3.6$ μ M).¹ A clinically useful anticancer agent.² Indirectly activates the metabolic kinase AMPK and consequently influences the mTORC1 pathway in human carcinomas.³ Activation of AMPK is associated with pemetrexed resistance.⁴ Induces G₀/G₁-phase cell cycle arrest in esophageal squamous cell carcinoma cells.⁵

- 1) Shih *et al.* (1997), LY231514, a pyrrolo[2,3-*d*]pyrimidine-based antifolate that inhibits multiple folate-requiring enzymes; *Cancer Res.* **57** 1116
- 2) Hanauske *et al.* (2001), Pemetrexed disodium: a novel antifolate clinically active against multiple solid tumors; *Oncologist* **6** 363
- 3) Rothbart *et al.* (2010), Pemetrexed indirectly activates the metabolic kinase AMPK in human carcinomas; *Cancer Res.* **70** 10299
- 4) Qin *et al.* (2019), AMPK activation induced in pemetrexed-treated cells is associated with development of drug resistance independently of target enzyme expression; *Mol. Oncol.* **13** 1419
- 5) Li *et al.* (2019), Pemetrexed exerts anticancer effects by inducing G₀/G₁-phase cell cycle arrest and activating the NOXA/Mcl-1 axis in human esophageal squamous cell carcinoma cells; *Oncol. Lett.* **17** 1851

PHYSICAL DATA

Molecular Weight:	597.49
Molecular Formula:	C ₂₀ H ₁₉ N ₅ O ₆ ·2Na·7H ₂ O
Purity:	>98% (TLC, HPLC)
	NMR: (Conforms)
Solubility:	Water (100 mg/mL)
Physical Description:	White solid
Storage and Stability:	Store as supplied at -20°C for up to 1 year from the date of purchase. Solutions in water may be stored at -20°C for up to 1 month.

Materials provided by Focus Biomolecules are for laboratory research use only and are not intended for human or veterinary applications.