

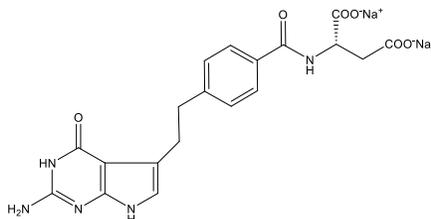
**Catalog # 10-2162**

**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 ( $K_i = 9.3$   $\mu$ M), and aminoimidazole carboxamide ribonucleotide formyltransferase ( $K_i = 3.6$   $\mu$ M).<sup>1</sup> A clinically useful anticancer agent.<sup>2</sup> Indirectly activates the metabolic kinase AMPK and consequently influences the mTORC1 pathway in human carcinomas.<sup>3</sup> Activation of AMPK is associated with pemetrexed resistance.<sup>4</sup> Induces G<sub>0</sub>/G<sub>1</sub>-phase cell cycle arrest in esophageal squamous cell carcinoma cells.<sup>5</sup>

- 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 G<sub>0</sub>/G<sub>1</sub>-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 <sub>20</sub> H <sub>19</sub> N <sub>5</sub> O <sub>6</sub> ·2Na·7H <sub>2</sub> 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.**