Pemetrexed (sodium salt hydrate)
Item No. 14269

CAS Registry No.: 357166-29-1
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, disodium salt, heptahydrate
MF: C$_{20}$H$_{19}$N$_{5}$O$_{6}$ • 2Na [7H$_2$O]
FW: 597.5
Purity: ≥98%
UV/Vis.: $\lambda_{\text{max}}$: 224 nm
Supplied as: A crystalline 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 (sodium salt hydrate) is supplied as a crystalline solid. Aqueous solutions of pemetrexed (sodium salt hydrate) can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of pemetrexed (sodium salt hydrate) in PBS (pH 7.2) is approximately 10 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

Pemetrexed is an antifolate with anticancer activity. It is an inhibitor of folate-dependent enzymes involved in purine synthesis, including thymidylate synthase and dihydrofolate reductase ($K_i$ = 109 and 7 nM, respectively, for the human recombinant enzymes), and the potency for thymidylate kinase is increased following polyglutaminate of pemetrexed ($K_i$ = 1.3 nM for pemetrexed-glu5). Pemetrexed is an inhibitor of other nucleotide metabolism enzymes in a polyglutamation-dependent manner, including glycinamide ribonucleotide formyltransferase, with $K_i$ values of 9,300 and 65 nM for the non-glutaminated and polyglutaminated mouse recombinant enzyme, respectively, and aminomimidazole 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 ($IC_{50}$ = 0.254 and 200 µM, respectively). 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.

References