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ProductInformation

5-Fluorouracil

Product Number **F 6627**
Store at Room Temperature

Product Description

Molecular Formula: $C_4H_3FN_2O_2$
Molecular Weight: 130.1
CAS Number: 51-21-8
Melting Point: 282-283 °C[1]
λ_{max}: 265 nm
Extinction coefficient: E^{mM} = 7.07 (0.1 M HCl)
pK_a: 8.0[1]
Synonym: 5-FU, 2,4-dihydroxy-5-fluoropyrimidine

5-Fluorouracil (5-FU) inhibits the activity of thymidylate synthetase,[2] which affects pyrimidine synthesis and leads to depletion of intracellular TTP pools.[3] 5-FU has also been proposed to interfere with the activity of ribosomal RNA binding protein (RRBP), at the level of pre-ribosomal RNA (pre-rRNA) processing.[4]

5-Fluorouracil is a potent agent against solid tumors that was introduced in 1957 for clinical use. It remains one of the most effective chemotherapeutic agents in such conditions as colorectal cancer, even at its limited response rates (10 - 30%).[5]

Vitamin E and pyrrolidinedithiocarbamate (PDTC) have been shown to induce apoptosis in CRC cells and to enhance the tumor growth inhibitory activity of 5-fluorouracil, suggesting that the presence of antioxidants during administration of chemotherapeutic agents such as 5-FU or doxorubicin may significantly improve therapeutic results.[6] Treatment of human cancer cells with 5-FU leads to an accumulation of cells in S-phase[7,8,9] and has been shown to induce p53-dependent apoptosis in a human cell line[7] and in mouse studies.[10]

A comprehensive description on the physical properties, spectral properties, therapeutic function, chemical properties, synthesis, metabolism, pharmacokinetics, methods of analysis, clinical toxicity, and chromatographic analysis of 5-fluorouracil has been published.[11]

Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions

5-Fluorouracil is soluble in 1 N NH_4OH (50 mg/ml), which yields a clear, colorless to light yellow solution. The product is also soluble in DMSO (10 - 50 mg/ml).

Storage/Stability

Solutions of 5-fluorouracil are expected to be stable in solution 7 days at 37 °C, several weeks at 25 °C, and at least 4 months at 0-4 °C. It is recommended to store 5-fluorouracil in airtight containers protected from light.[12]

References

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