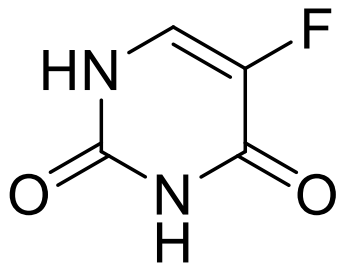
Product data sheet

MedKoo Cat#: 106613 Name: Fluorouracil CAS#: 51-21-8 Chemical Formula: $C_4H_3FN_2O_2$ Exact Mass: 130.0179 Molecular Weight: 130.08	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.
	In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:
Fluorouracil, also known as 5-Fluorouracil and 5-FU, is a medication which is used in the treatment of cancer. It is a suicide inhibitor and works through irreversible inhibition of thymidylate synthase. It belongs to the family of drugs called the antimetabolites. It is also a pyrimidine analog. Fluorouracil has been given systemically for anal, breast, colorectal, oesophageal, stomach, pancreatic and skin cancers (especially head and neck cancers). It has also been given topically (on the skin) for actinic keratoses, skin cancers and Bowen's disease.

2. CoA, QC data, SDS, and handling instruction
SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
DMSO	15	11.31
Water	20	153.75

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	**1 mg**	**5 mg**	**10 mg**
1 mM	7.69 mL	38.44 mL	76.88 mL
5 mM	1.54 mL	7.69 mL	15.38 mL
10 mM	0.77 mL	3.84 mL	7.69 mL
50 mM	0.15 mL	0.77 mL	1.54 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator
Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study
In vitro study

1. Lakkadwala S, Singh J. Dual Functionalized 5-Fluorouracil Liposomes as Highly Efficient Nanomedicine for Glioblastoma Treatment as Assessed in an In Vitro Brain Tumor Model. J Pharm Sci. 2018 Nov;107(11):2902-2913. doi: 10.1016/j.xphs.2018.07.020. Epub 2018 Jul 25. PMID: 30055226; PMCID: PMC6215598.

2. Ruan J, Sun S, Cheng X, Han P, Zhang Y, Sun D. Mitomycin, 5-fluorouracil, leflunomide, and mycophenolic acid directly promote hepatitis B virus replication and expression in vitro. Virol J. 2020 Jul 1;17(1):89. doi: 10.1186/s12985-020-01339-5. PMID: 32611423; PMCID: PMC7331192.

In vivo study

1. McQuade RM, Stojanovska V, Donald E, Abalo R, Bornstein JC, Nurgali K. Gastrointestinal dysfunction and enteric neurotoxicity following treatment with anticancer chemotherapeutic agent 5-fluorouracil. Neurogastroenterol Motil. 2016 Dec;28(12):1861-1875. doi: 10.1111/nmo.12890. Epub 2016 Jun 28. PMID: 27353132.

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7. Bioactivity

Biological target:

Fluorouracil (5-Fluorouracil, 5-FU, NSC 19893) is a DNA/RNA synthesis inhibitor, which interrupts nucleotide synthetic by inhibiting thymidylate synthase (TS) in tumor cells.

In vitro activity

The in vitro cellular uptake study showed that the dual-functionalized liposomes are capable of higher cellular uptake in glioblastoma (U87) and brain endothelial (bEnd.3) cells monolayer. In addition, dual-functionalized liposomes demonstrated significantly higher apoptosis in U87 cells. The liposomal nanoparticles showed excellent blood compatibility and in vitro cell viability, as studied by hemolysis and 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide assay, respectively. The 5-FU-loaded dual-functionalized liposomes demonstrated higher transport across the brain endothelial barrier and delivered 5-FU to tumor cells inside poly(lactic-co-glycolic acid)-chitosan scaffold (an in vitro brain tumor model), resulting in significant tumor regression.

Reference: J Pharm Sci. 2018 Nov;107(11):2902-2913. https://www.ncbi.nlm.nih.gov/pmc/articles/pmid/30055226/

In vivo activity

Short-term administration of 5-FU (3 days) increased gastrointestinal transit, induced acute intestinal inflammation and reduced the proportion of neuronal nitric oxide synthase-immunoreactive neurons. Long-term treatment (7, 14 days) resulted in delayed gastrointestinal transit, inhibition of colonic migrating motor complexes, increased short and fragmented contractions, myenteric neuronal loss and a reduction in the number of ChAT-immunoreactive neurons after the inflammation was resolved. Gross morphological damage to the colon was observed following both short- and long-term 5-FU treatment.

Reference: Neurogastroenterol Motil. 2016 Dec;28(12):1861-1875. https://doi.org/10.1111/nmo.12890

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.