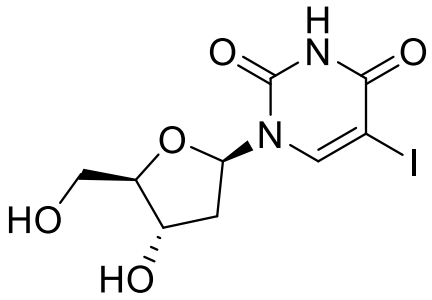
Product data sheet

MedKoo Cat#: 120207 Name: Idoxuridine CAS: 54-42-2 Chemical Formula: $C_9H_{11}IN_2O_5$ Exact Mass: 353.9713 Molecular Weight: 354.1005	
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:
Idoxuridine is an anti-herpesvirus antiviral and anticancer drug. It is a nucleoside analogue, a modified form of deoxyuridine, similar enough to be incorporated into viral DNA replication, but the iodine atom added to the uracil component blocks base pairing. It is used only topically due to cardiotoxicity. It was synthesized by William Prusoff in the late 1950s. Initially developed as an anticancer drug, idoxuridine became the first antiviral agent in 1962.

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
DMF	16.0	45.18
DMSO	56.67	160.03
PBS (pH 7.2)	5.0	14.12

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.82 mL	14.12 mL	28.24 mL
5 mM	0.56 mL	2.82 mL	5.65 mL
10 mM	0.28 mL	1.41 mL	2.82 mL
50 mM	0.06 mL	0.28 mL	0.56 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. Novak J, Potemkin VA. A new glimpse on the active site of SARS-CoV-2 3CLpro, coupled with drug repurposing study. Mol Divers. 2022 Oct;26(5):2631-2645. doi: 10.1007/s11030-021-10355-8. Epub 2022 Jan 10. PMID: 35001230; PMCID: PMC8743077.
2. Almalki SA, Bawazeer TM, Asghar B, Alharbi A, Aljohani MM, Khalifa ME, El-Metwaly N. Synthesis and characterization of new thiazole-based Co(II) and Cu(II) complexes; therapeutic function of thiazole towards COVID-19 in comparing to current antivirals in treatment protocol. J Mol Struct. 2021 Nov 15;1244:130961. doi: 10.1016/j.molstruc.2021.130961. Epub 2021 Jun 24. PMID: 34188314; PMCID: PMC8222988.

In vivo study

1. Cherry HM, Roelofs AJ, Kurth TB, De Bari C. In vivo phenotypic characterisation of nucleoside label-retaining cells in mouse periosteum. Eur Cell Mater. 2014 Mar 11;27:185-95; discussion 195. doi: 10.22203/ecm.v027a14. PMID: 24614984.

7. Bioactivity
Biological target:

Product data sheet

Idoxuridine (5-Iodo-2′-deoxyuridine, 5-IUdR, IdUrd) is an iodinated thymidine analogue that competitively inhibits phosphorylases.

In vitro activity

The model is used to perform a drug-repurposing study, with the main aim to identify existing drugs with the highest 3CLpro inhibition power. Among antiviral agents, lopinavir, idoxuridine, paritaprevir, and favipiravir showed the highest inhibition potential.

Reference: Mol Divers. 2022 Oct;26(5):2631-2645. https://pubmed.ncbi.nlm.nih.gov/35001230/

In vivo activity

Subsets of IdU+ cells expressed the osteoblast-lineage markers Runx2 and osteocalcin. The IdU+ cells expressing osteocalcin were lining the bone and were negative for the MSC marker p75. In conclusion, mouse periosteum contains nucleoside-label-retaining cells with a phenotype compatible with MSCs that are distinct from pericytes and osteoblasts.

Reference: Eur Cell Mater. 2014 Mar 11;27:185-95; discussion 195. https://pubmed.ncbi.nlm.nih.gov/24614984/