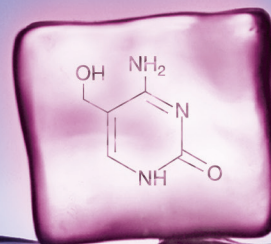


# Bringing you the Sixth Base



## Hydroxymethyl dCTP

### Features

- Ultra-high purity >99% triphosphate by HPLC
- Readily incorporated by standard DNA polymerases
- Hydroxymethylated substrates can be ligated by standard ligases
- DNase, RNase and Nickase free

### Applications

- A powerful new tool for DNA methylation and epigenetics research
- Studies of hydroxymethylated DNA/protein interaction
- Site-Directed Mutagenesis
- Substitution of dCTP in a wide variety of molecular biology assays
- Labeling of DNA *in vitro*

5-hmC (5-Hydroxymethylcytosine) is the hydroxylated and methylated version of cytosine described as the “sixth base” of the genome.

Bioline has developed a novel enzymatic synthesis method for producing highly purified Hydroxymethyl dCTP (HMdCTP) that mimics its biological synthesis in T-even bacteriophages. This powerful new tool opens up multiple avenues of investigation for DNA methylation and epigenetics research. Highly purified HMdCTP (>99% pure by HPLC, Fig.1) can be used in a number of molecular biological applications.



**United Kingdom**  
Tel: +44 (0)20 8830 5300

**Germany**  
Tel: +49 (0)3371 681 229

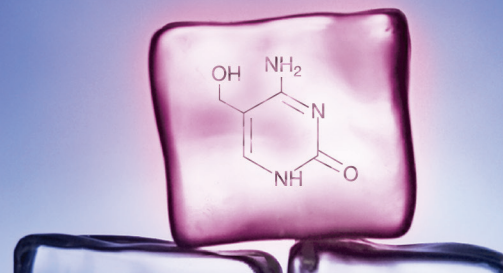
**USA**  
Toll Free: 888 257 5155

**Australia**  
Tel: +61 (0)2 9209 4180

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# Hydroxymethyl dCTP

HMdCTP can be used as a substrate for PCR amplification of DNA containing hydroxymethylated cytosine in place of cytosine. HMdCTP can be used to discriminate between the different DNA molecules synthesized in one or several PCR cycles. By the use of appropriate enzymes, it is possible to separate the unhydroxymethylated starting material from the hemi-hydroxymethylated intermediate (produced by a single primer extension reaction) and from the fully-hydroxymethylated end product.

This ability to generate PCR products whereby cytosine is uniformly replaced by hydroxymethylated cytosine can also be applied to: epigenetic/methylation assays, studies of hydroxymethylated DNA/protein interaction, and forensic DNA analysis. Further applications include developing novel strategies for site-directed mutagenesis and synthesizing DNA fragments resistant to cleavage by a wide range of restriction endonucleases as well as generation of cDNA libraries.

For more information regarding Bioline's Bulk, Custom and OEM nucleotide service please visit our dedicated microsite.

Physical constants, spectral and HPLC analysis	
Product	HMdCTP Lithium 100mM Solution
Nomenclature	5 hydroxymethyl 2'-deoxycytidine-5'-triphosphate
Formula	$C_{11}H_{14}N_4O_{14}P_3Li_4$
Molecular Weight	520.918g/mol
$\lambda_{max}$ pH 7.0	275nm
$\epsilon$ at $\lambda_{max}$	$7.7 E \times mmol^{-1} \times cm^{-1}$
Concentration	100mM $\pm$ 2%
Appearance	Clear Colorless Solution
pH of Solution	7.5
dNTP (HPLC Area)	>99%
dNDP (HPLC Area)	<1%
DNases, RNases, Nicking Activity	Negative
Storage	at -20°C
Stability	>24 months
$A_{250}/A_{260}$	0.90 $\pm$ 0.03
$A_{250}/A_{260}$	1.33 $\pm$ 0.03
Storage	at -20°C
Stability	>24 months

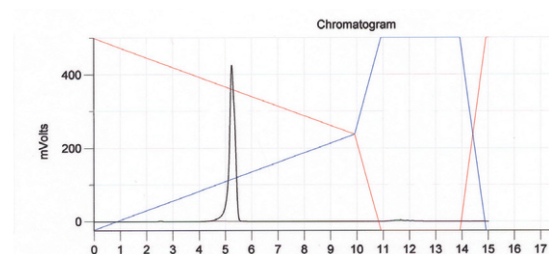
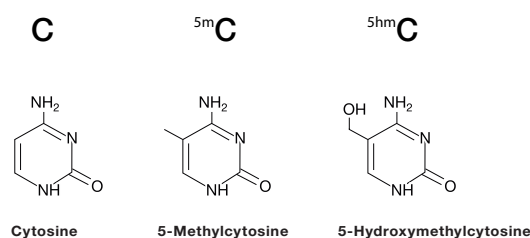


Fig. 1 HPLC Profile of >99% pure HMdCTP (Hydroxymethylcytosine)

## Product Citations

- Guo, J.U., *et al. Cell* **145(3)**, 423-434 (2011).
- Stroud, H., *et al. Genome Biol.* **12(6)**, R54 (2011).
- Kinney, S.M., *et al. J. Biol. Chem.* **286**, 24685-24693 (2011).
- Robertson, A.B., *et al. Nucleic Acids Res.* **39**, e55 (2011).
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- Huang, Y., *et al. PLoS ONE* **5(1)**, e8888 (2010).
- Jin, S-G., *et al. Nucleic Acids Res.* **38**, e125 (2010).
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- Nestor, C., *et al. Biotechniques* **48**, 317-319 (2010).
- Tahiliani, M., *et al. Science* **324**, 930-935 (2009).

## Ordering Information

PRODUCT	PACK SIZE	PRESENTATION	CAT NO.
dATP	25 $\mu$ mol	100mM (1 x 250 $\mu$ l)	BIO-39036
dCTP	25 $\mu$ mol	100mM (1 x 250 $\mu$ l)	BIO-39038
dGTP	25 $\mu$ mol	100mM (1 x 250 $\mu$ l)	BIO-39037
dTTP	25 $\mu$ mol	100mM (1 x 250 $\mu$ l)	BIO-39039
dUTP	25 $\mu$ mol	100mM (1 x 250 $\mu$ l)	BIO-39035
HMdCTP	25 $\mu$ mol	100mM (1 x 250 $\mu$ l)	BIO-39046

PSGBL0312V1.0



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