

Product Specifications

Custom Oligo Synthesis, antisense oligos, RNA oligos, chimeric oligos, Fluorescent dyes, Affinity Ligands, Spacers & Linkers, Duplex Stabilizers, Minor bases, labeled oligos, Molecular Beacons, siRNA, phosphonates Locked Nucleic Acids (LNA); 2'-5' linked Oligos

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Oligo Modifications

For research use only. Not for use in diagnostic procedures for clinical purposes.

etheno dA

		$N \longrightarrow N$
Category	Minor Bases	5' Oligo
Modification Code	Eth-dA	0=P-0-1 N N
Reference Catalog Number	26-6506	он 🗸
5 Prime	Υ	
3 Prime	Υ	0=P-0-/// Oligo 3'
Internal	Υ	OH
Molecular Weight(mw)	337.23	etheno deoxyadenosine dA [26-6506-XX]

1,N-6 etheno deoxyadenosine (Etheno-dA) is a highly fluorescent derivative of dA, and can be incorporated at any position(s) within a DNA or RNA oligonucleotide. Etheno-dA has excitation maxima at 270 nm and 300 nm, and an emission maximum at 410 nm. Selective introduction of etheno-dA into DNA or RNA oligonucleotides is particularly useful in various structure-function studies of RNA, protein-RNA complexes, and DNA-RNA based diagnostics applications (1). However, because etheno-dA does not base-pair with dT or dU, oligos containing etheno-dA at either the 3'-end or in the middle will not function as either a sequencing or PCR primer. Etheno-dA-modified primers must have the modification(s) located either at or close to the 5'-end in order to so function (1).

Etheno-dA-modified oligonucleotides have proven particularly useful in the study of the repair of alkylated DNA damage by the base-excision-repair (BER) mechanism For example, such modified oligos were used to elucidate the function of N-methylpurine DNA glycosylase (2), as well as providing insights into how this BER enzyme facilitates resistance of astrocyte brain tumors (malignant astrocytomas) to DNA-alkylation-based chemotherapy agents (such as nitrosoureas) (3). Exocyclic etheno DNA adducts likely play an important role in carcinogenesis in both rodents and humans (4), and etheno-dA-modified oligonucleotides can be used as research tools for the study of carcinogenesis in various tissues. **References**

- 1. Srivastava, S.C., Raza, S.K., Misra, R. 1,N6-etheno deoxy and ribo adenoGine and 3,N4-etheno deoxy and ribo cytidine phosphoramidites. Strongly fluorescent structures for selective introduction in defined sequence DNA and RNA molecules. *Nucleic Acids Res.* (1994), **22**: 1296-1304.
- 2. Dosanjh, M.K., Roy, R., Mitra, S., Singer, B. 1, N6-ethenoadenine is preferred over 3-methyladenine as substrate by a cloned human N-methylpurine-DNA glycosylase (3-methyladenine-DNA glycosylase). *Biochemistry* (1994), **33**: 61624-1628. 3. Harrison, J.F., Rinne, M.L., Kelley, M.R., Druzhyna, N.M., Wilson, G.L., Ledoux, S.P. Altering DNA Base Excision Repair: Use of Nuclear and Mitochondrial-Targeted N-Methylpurine DNA Glycosylase to Sensitize Astroglia to Chemotherapeutic Agents. *Glia*. (2007), **55**: 1416-1425.
- 4. Chung, F-L., Chen, H-J.C., Nath, R.G. Lipid peroxidation as a potential endogenous source for the formation of exocyclic DNA adducts.



Carcinogenesis (1996), 17: 2105-2111.

