

Etheno DNA Amidites and Supports

Applicable to products under "Etheno DNA Amidites and Supports"

Etheno Adenosine & Etheno Cytidine:

The application of fluorescent conjugates to study biochemical processes of macromolecules is well recognized and extremely useful. Most of these methods involve either covalent attachment of fluorescent reporter groups or use of fluorescent nucleobases that contains extended conjugation through fused aromatic rings to the natural bases. Former approach remains the possibility of perturbation of discrete structure, especially in the neighborhood of the chromophore. In the later approach, some of these nucleosides maintain the Watson-Crick hydrogen bonding face and therefore maintain the ability to hybridize within a DNA duplex. Among the first such modified nucleotides were the "etheno" series synthesized by Leonard and collaborators (Figure 1).^{1,2} With the etheno nucleoside within the chain, this possibility is minimized significantly, as the small structural change can be tolerated to a certain degree. ChemGenes Corporation have developed protocol for incorporation of Etheno-2'-deoxy-Cytidine, Etheno-2'-deoxy-Adenosine into DNA and Etheno-*ribo*-Cytidine, Etheno-*ribo*-Adenosine RNA oligonucleotides *via* standard cyanoethyl phosphoramidite chemistry.³

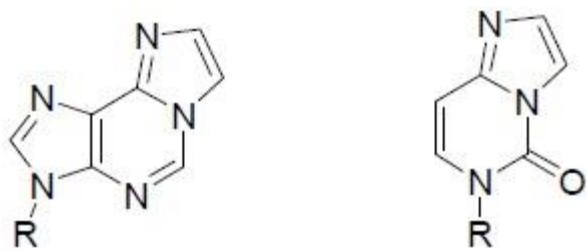


Figure 1: Etheno-adenosine and etheno-Cytosine. R = deoxyribose or ribose.

ChemGenes Corporation offers ultra high pure Etheno-2'-deoxy-Cytidine (CLP-9182), Etheno-2'-deoxy Adenosine (CLP-9181), Etheno-*ribo* Cytidine (CLP-9192), Etheno-*ribo*-Adenosine (CLP-9191) for researchers in this exciting field of fluorescent nucleobases.

Salient Features and Applications of Etheno Nucleosides:

- Etheno-Nucleosides have high fluorescent intensity, especially etheno cytidine. These modifications have been used for various applications such as: extremely low detection probes, selective introduction in synthetic DNA/RNA, and nucleic acid structure function & determination.
- The stepwise RNA primer synthesis incorporating the etheno modified nucleoside at a specific site in a sequence has been achieved in two stages; (a) enzymatic methods of chain elongation or fragment synthesis and (b) the etheno modification reaction on adenosine by reaction with chloroacetaldehyde.⁴
- The fluorescent properties of the synthesized molecules, due to the presence of etheno nucleoside in the sequence, have been utilized in determination of the nature of protein-nucleic acid complexes.
- These etheno fluorescent nucleosides are base sensitive and should be deprotected using mild conditions.³
- The characteristic and high fluorescent intensity for adenosine sites (detection below 1×10^{-9} M, Excitation λ is 260 nm, Emission λ is 430 nm) below 1×10^{-7} M for Cytidine sites is particularly suited for the biochemical and biological research and product development applications.³
- The usefulness of these etheno containing modified sequences as sequencing and amplification primers is demonstrated by their full participation in polymerase chain reaction experiments.
- Furthermore due to the strong fluorescent properties of the etheno modified nucleosides, a number of useful biological and biochemical applications of these modified nucleosides have been established.⁵