Thymine Dimer Cis-syn

Cis-syn thymine is classified as a cis-syn cyclobutane dimer of two thymine bases, and is primarily used in studies of UV-induced DNA damage and associated repair mechanisms. In the cell, cis-syn thymine dimer DNA lesions are primarily formed when two adjacent thymidine bases are irradiated by UV light (most commonly from sunlight). The result is the generation of a dimer in the form of a cyclobutane (1). This bulky adduct lesion causes large structural distortion in the double helix. While not mutagenic, they act as effective replication blocks; as such, they are potentially lethal to the cell (2). This lesion is repaired via one of two repair DNA repair mechanisms: direct reversal with the enzyme photolyase (which cleaves the dimer) (3) or by the nucleotide excision repair (NER) mechanism (4).

Oligos synthesized with cis-syn thymine dimer are stable for greater than 6 month when stored frozen, protected from light and preferably in an ethanol precipitated dried state. Reconstituted oligos should be preferably stored frozen in aliquots to avoid multiple freeze thaw cycles.

References