O4 Methyl dT

O4-Methyl-deoxythymidine (O4-Me-dT) is classified as an O-alkyl pyrimidine, and O4-Me-dT-modified oligonucleotides are primarily used in studies of the role of DNA alkylating agents in mutagenesis and carcinogenesis, and in studies into possible enzymatic mechanisms involved in repair of DNA alkylation damage. Both in vitro and in vivo, O4-Me-dT DNA lesions are formed by reaction with N-nitrosoureas (known carcinogens) (1). O4-Me-dT can mispair with G (leading to T-to-C transitions) (2). In prokaryotes, O4-Me-dT lesions are removed by specific excision of the O4-methyl group by the methyltransferases Ogt or Ada, and the native thymine base restored (3). In yeast and human, inactivation of methyltransferases in the presence of O4-Me-dT-modified oligonucleotides suggests that a corresponding repair mechanism for O4-Me-dT lesions may exist in higher eukaryotes as well (3). References