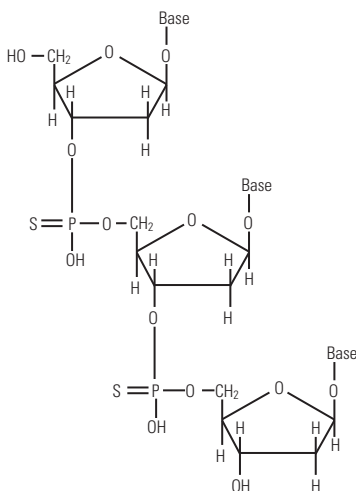


Phosphothioate Oligonucleotide (PTO)

Description

Oligonucleotides with one sulfur atom replacing oxygen in the inter-nucleotide linkage



PTOs contain one sulfur atom in place of an oxygen atom in the internucleotide linkage of DNA or RNA. They are extremely useful as antisense molecules inhibiting gene expression, because they are more resistant to nuclease degradation than natural DNA or RNA and still bind to complementary nucleic acid sequences. The more PTO linkages present in an oligonucleotide, the higher its stability. Phosphothioate oligonucleotides can be ordered as full PTOs (whole oligonucleotide containing PTO linkages), as “thiocap” oligonucleotides, (with only a few – normally 1 to 3 – PTO linkages at the respective 3'- and/or 5'- ends) or as chimeras with several stretches of PTOs interspersed in the oligonucleotide

Full PTOs are more stable than “thio-cap” oligonucleotides, but due to their extreme stability and their hydrophobic character they can also have toxic effects on living cells. If cell toxicity is a problem in your assay, we recommend that you use “thio-cap” oligonucleotides instead. “Thio-caps” can even further stabilize 2'-O-Me-RNA.

The phosphorous atoms within PTO backbones are optically active. If you wish, our biopolymer specialists can even separate and purify the different stereoisomers of molecules with one PTO linkage in special cases.

The sulfur atoms within PTO backbones are chemically reactive (but less reactive than “normal” thiol groups). Thus, they offer another possibility of modifying your oligonucleotide even further.

We can also couple modifications to oligonucleotides either via the standard phosphodiester bond or via the phosphothioate linkage. In general, modifications are stable against enzymatic digestion, but in some cases, PTO linkage of modifications to oligonucleotides can stabilize them. Please indicate the desired linkage type when ordering.

Advantages

- stable (resistant to nucleases)
- hybridization to complementary sequences as standard DNA
- PTOs are one of the least expensive ways to stabilize oligonucleotides
- available for DNA, RNA, LNA, O-Me-RNA

Applications

- *in-vivo* application of oligonucleotides
- stabilizing of oligonucleotides towards nuclease degradation
- antisense experiments
- modification of oligos via the sulfur atom (not as reactive as standard thiol groups)

Product offering

PTOs are available at all scales from 0,02 μmol up to 100 mg.

For ordering please indicate asterisks * for all phosphothioate linkages at the required positions in the sequence.

Easily order via the web:
www.thermo.com/oligos
or via email:
sales.oligos@thermo.com

In addition to these offices, Thermo Fisher Scientific maintains a network of representative organizations throughout the world.

Contact

Sedanstrasse 18
89077 Ulm
Germany
+49 (0) 731 93579 290
services.biopolymers@thermo.com

www.thermo.com/biopolymers



Thermo Fisher Scientific GmbH, Ulm, Germany is ISO certified

©2008 Thermo Fisher Scientific Inc. All rights reserved. All trademarks are the property of Thermo Fisher Scientific Inc. and its subsidiaries.

Specifications, terms and pricing are subject to change. Not all products are available in all countries. Please consult your local sales representative for details.