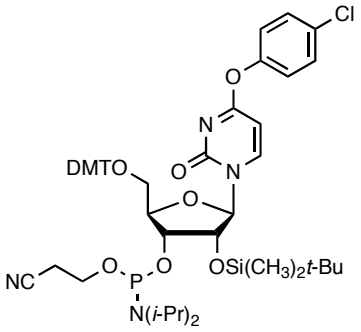
O^4-Chlorophenyl-U CEP (BA 0263)

Product Information



O^4-Chlorophenyl-U CEP is a convertible nucleoside, allowing the attachment of nonnatural functional groups to RNA for structural studies.[1] After incorporation into an oligoribonucleotide by standard phosphoramidite chemistry, treatment with ammonia, methylamine, or higher alkylamines, including those bearing tethered functional groups, leads to displacement of 4-chlorophenol with resultant installation of a 4-amino group, i.e., producing cytidine or N^4-alkylcytidine residues.

Coupling: Use at 0.1 M in MeCN. Use the standard 1 micromole RNA synthesis cycle for the ABI 392 synthesizer, modified for an extended coupling time of 12 min. Use N-Pac ribonucleoside phosphoramidites. Proceeds with average stepwise yields of 97%.

Displacement, cleavage, and nucleobase deprotection: (a) for displacement of the 4-chlorophenoxy group with ammonia, treat resin-bound oligonucleotide with 1.5 mL of methanolic ammonia (7 M, saturated at 0 °C) for 18 h at 42 °C. (b) for displacement with methylamine, treat resin-bound oligonucleotide with 1.5 mL of ethanolic methylamine (8 M) for 18 h at 42 °C. (c) for displacement with other alkylamines, treat resin-bound oligonucleotide with 0.2-0.4 mL of 2 M amine in methanol for 18 h at 42 °C, filter away the resin, then subject to separation on 20 mL of Dowex 50 x 8-100 cation exchange chromatography (ammonium form), eluting with 9:1 MeOH/water.

Desilylation: Treat oligonucleotide with 0.6 mL of 1 M TBAF in THF for 20 h at rt, quench with 0.8 mL of 1 M TEAA, desalt (C18 SepPak), elute with 30% MeCN/0.1 M TEAB, lyophilize.

Reference:

1. "A chemical method for site-specific modification of RNA: The convertible nucleoside approach", Allerson, C. R.; Chen, S. L.; Verdine, G. L. *J. Am. Chem. Soc.* **1997**, *119*, 7423-7433.