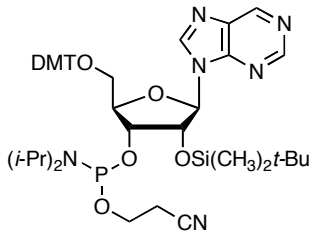
Nebularine CEP (Purine Riboside CEP, BA 0265)

Product Information



Nebularine (purine riboside) lacks exocyclic functional groups and offers an altered hydrogen bonding scheme while retaining base stacking ability.[1-4] It can be viewed as an adenosine analog with the hydrogen bond donor deleted. Sequential replacement of conserved adenosine residues in hammerhead ribozymes by nebularine residues[2b,3] suggested the presence of interstrand non-Watson-Crick hydrogen bonding.[2b] Depending on the position of the nebularine residue, cleavage rates were either unchanged or diminished.[2b,3] Incorporation of nebularine into a GNRA tetraloop has also been useful for studying this type of RNA structural feature.[4] Nebularine has been installed into RNA using two different phosphoramidites, one with 2'-*O*-THP protection[1] and one with 2'-*O*-TBDMS protection.[2-4] We offer the latter, Nebularine CEP (BA 0265) as well as the 2-deoxy version, 2'-Deoxynebularine CEP (BA 0016).

Coupling, cleavage, and nucleobase deprotection: Fu, et al., suggest doubling the concentration of the phosphoramidite to 0.2 M.[2b] Wörner, et al., used a 12 min coupling.[4] Cleavage and nucleobase deprotection were accomplished several ways: Slim and Pritchard[2b] used G^{Pac}, A^{Pac}, C^{Bz} phosphoramidites and carried out cleavage and base deprotection with methanolic ammonia at room temperature overnight, which they believed caused less strand cleavage than 55 °C as required for A^{Bz} and G^{Bz} deprotection. Fu, et al., employed standard phosphoramidites and 3:1 concentrated ammonium hydroxide:ethanol for 12 h at 55 °C, then 1 M TBAF in THF for 16 h.[3] Wörner, et al., used standard phosphoramidites and concentrated ammonium hydroxide at 55 °C overnight, then $Et_3N{\bullet}(HF)_3$, 24 h, rt.[4]

References:

(1) SantaLucia, J., Jr.; Kierzek, R.; Turner, D. H. *J. Am. Chem. Soc*. **1991**, *113*, 4313-4322.

(2) (a) Slim, G.; Pritchard, C.; Biala, E.; Asseline, U.; Gait, M. J. *Nucleic Acids Symp. Ser*. **1991**, *24*, 55-58. (b) Slim, G.; Gait, M. J. *Biochem. Biophys. Res. Commun*. **1991**, *183*, 605-609.

(3) Fu, D.-J.; Rajur, S.; McLaughlin, L. W. *Biochemistry* **1993**, *32*, 10629-10673.

(4) Wörner, K.; Strube, T.; Engels, J. W. *Helv. Chim. Acta* **1999**, *82*, 2094-2104.